Yangtze River Protection and Ecological Restoration Program

(P171644)

—Central Basin Component

Environmental and Social Management Framework (ESMF)

Central Program Management Office (CPMO)

September 24, 2021

Contents

List of Tables

List of Figures

Acronyms

CNY	Chinese Yuan
CPMO	Central Program Management Office
CWRC	Changjiang (Yangtze) Water Resources Commission
ESS	Environmental and Social Standard
EIA	Environmental Impact Assessment
EMDP	Ethnic Minority Development Plan
E&S	Environmental and Social
ESS	Environmental and Social Standard
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
EHSG	World Bank Group Environmental, Health and Safety Guidelines
FI	Financial Intermediary
GRM	Grievance Redress Mechanism
HD	House Demolition
IPF	Investment Project Financing
LA	Land Acquisition
LMP	Labor Management Procedure
MEE	Ministry of Ecology and Environment
NDRC	National Development and Reform Commission
PforR	Program-for-Results
PLG	Program Leading Group
PRC	People's Republic of China
RAP	Resettlement Action Plan
R&D	Research and Development
SEF	Stakeholder Engagement Framework
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
TA	Technical Assistance
ToR	Terms of Reference
USD	US Dollar
YREB	Yangtze River Economic Belt

Units

Currency unit	=	Yuan (CNY)
US$1.00	=	RMB6.56
1 hectare	=	15 mu

Executive Summary

China, with the support of the World Bank, is implementing the Yangtze River Protection and Ecological Restoration Program (hereinafter, the "Project"). The development objective of the Project is: to improve institutional arrangements for ecological protection and water pollution abatement in select regions of the Yangtze River Basin. The Project comprises **Program-for-Results (PforR)** financing for priority provincial components; and **Investment Project Financing (IPF)** for a **central basin component** to support technical assistance (TA) activities at the basin level (hereinafter, the "Central Basin Component").

The World Bank's Environmental and Social Framework (ESF) applies to the Central Basin Component. This Environmental and Social Management Framework (ESMF) is specifically developed for the Central Basin Component to guide the management of E&S risks of the technical assistance activities, while the environmental and social (E&S) management documents for the PforR component are separately prepared following the World Bank's PforR policy and guidelines, and are not covered by this ESMF.

The key points of this ESMF are:

E&S risks and impacts screening

The Central Basin Component is essentially a series of TA activities focused on technical and policy studies for the ecological protection and rehabilitation of the Yangtze River and has inherent significant positive E&S benefits. The Central Basin Component is proposed to include a series of studies and capacity building activities across six activity areas, and excludes any physical works (civil works). The activities are not expected to cause any direct adverse E&S risks and impacts in consideration of its nature. In terms of the Bank Environmental and Social Standards (ESSs), the potential E&S risks of the TA activities mainly include: 1) inadequate stakeholder engagement; and 2) labor risks of the management and research staff for the TA activities, such as health and safety risks in fieldwork (including COVID-19 risks), and timely payment of full travel subsidies as per laws and regulations. In general, the overall environmental and social risk rating of implementing the TA activities itself is "moderate".

In addition, some findings and suggestions of the TA activities, if adopted and implemented, may lead to potential downstream E&S risks, therefore warranting careful consideration. It is worth noting that the technical assistance activities under the Central Basin Component are not directly drafting polices, plans or regulations for the government, but only provide research suggestions towards such documents. The formal drafting, evaluation, and implementation of policies, plans and regulations is not part of the Central Basin Component.

E&S risks management

For those TA activities that have potential downstream E&S implications, it is required that **the Terms of Reference (TORs)** will explicitly specify the requirements for potential downstream E&S risks/impacts assessment and stakeholder engagement, including the requirement for E&S expertise in the study team. In **the study output reports**, a dedicated chapter for E&S impact assessment will be required to assess the potential downstream E&S risks and impacts and propose necessary mitigation measures.

These TORs shall be submitted to the Bank for prior review to ensure the inclusion of adequate E&S assessment considerations. During implementation, potential downstream E&S risks will be identified, and mitigation suggestions proposed accordingly on the basis of

meaningful stakeholder engagement; TA outputs should include E&S assessment (such as an E&S analysis chapter, strategic environmental and social impact assessment, cumulative impact assessment (if relevant), and TA output reports should comply with the Bank ESSs and receive no objection from the Bank.

Capacity building plan

This ESMF covers a capacity training program covering multiple audiences including the Central Program Management Office (CPMO), external experts, TA implementation agencies and other relevant stakeholders to strengthen the E&S performance of the Central Basin Component and ensure that this ESMF is implemented as desired.

Stakeholder Engagement Framework (SEF)

This E&S package includes an SEF which identifies main stakeholders (including project-affected parties, other interested parties and vulnerable groups) and their needs and impacts, develops an information disclosure and consultation plan, specifies resources arrangements, and establishes a grievance redress mechanism (GRM). The CPMO and TA activity implementation agencies shall develop a stakeholder engagement plan for each activity (which can be part of the TA work plan) before its start-up and conduct meaningful stakeholder engagement during whole implementation stage to direct and improve research findings and management suggestions.

Environmental and Social Commitment Plan (ESCP)

The CPMO commits in the (ESCP) to follow the procedures as set out in this ESMF to manage the E&S risks and impacts (including labor risks) of the TA activities and potential downstream E&S risks in a proportionate manner, and provide regular reports on ESCP, ESMF and SEF implementation progress and performance to the Bank.

1 Project Description

1.1 Background

The Yangtze River originates from the Gradando main peak of the Tanggula Mountain in the Qinghai-Tibet Plateau, with a trunk stream length of over 6,300km, running through Qinghai, Sichuan, Tibet, Yunnan, Chongqing, Hubei, Hunan, Jiangxi, Anhui, Jiangsu and Shanghai provinces (autonomous regions / municipalities directly under the central government) into the East China Sea. Its tributaries extend to Gansu, Shaanxi, Guizhou, Henan, Zhejiang, Guangxi, Guangdong and Fujian provinces (autonomous regions), with a basin area of about 1.8 million km^2, accounting for 18.8% of China's land area. Since the beginning of reform and opening-up, China has experienced rapid economic and social development, yet at the huge cost of environmental sustainability. The government of China has already recognized this challenge and is embarking upon a transition to a more balanced and sustainable economic growth model. One of the key urgent tasks is to address water and environment issues relating to challenges of integrated development and pollution control. The Yangtze River plays a major role in the historical, cultural and political identity of China as the "Mother River", while also being the country's social and economic powerhouse. It is also one of the world's most important economic arteries, and home to integrated global manufacturing supply chains. President Xi Jinping visited the Yangtze River three times in January 2016, April 2018 and November 2020, and made important speeches, drawing a blueprint for the protection of the Yangtze River and the high-quality development of the Yangtze River Economic Belt (YREB).

Since the Yangtze River Basin is vast and complex, there are still some difficulties in ecosystem protection and restoration, and green development, such as incomplete understanding of ecosystems and their problems, unsound value realization mechanisms for ecological products, and insufficient coordination mechanisms for ecological protection and restoration.

To address environmental challenges in the Yangtze River Basin, China has implemented a series of national actions for ecological protection and restoration, developed a number of policies and regulations, invested significant resources on environmental protection, infrastructure and capacity building. Under this broad context, China, with the support of the World Bank, is implementing the Yangtze River Protection and Ecological Restoration Program.

The Project's development objective is to improve institutional arrangements for ecological protection and water pollution abatement in select regions of the Yangtze River Basin. The Program contributes to achievement of the Government's national strategy for the ecological protection and water pollution control in the Yangtze River through: (i) basin level coordination, policy development, and capacity-building; (ii) provincial level development of policies, regulations and guidelines; (iii) sub-basin level ecological protection and integrated water management through implementation of policy measures, regulations and guidelines; and (iv) county level investments aimed at reducing water pollution, including plastics. The Project consists of:

1) Provincial components with **Program-for-Results (PforR)** financing, supporting activities in selected provinces; and
2) A **central basin component** with **Investment Project Financing (IPF),** supporting technical assistance activities at the central and basin level.

Different E&S management policy requirements apply to the above components. The World Bank's Environmental and Social Framework (ESF) applies to the Central Basin Component. This Environmental and Social Management Framework (ESMF) is specifically developed for the Central Basin Component to guide the management of E&S risks of the TA activities, while the E&S management documents for the PforR components are separately prepared following the World Bank's PforR policy and guidelines, and are not covered by this ESMF.

1.2 Project Activities

All activities under the Central Basin Component are research and capacity building activities, covering key water and environmental issues in the Yangtze River Basin, such as pollution source control, water ecosystem rehabilitation (including in important lakes and tributaries), solid waste recycling and utilization, value realization of ecological products etc. Systematic solutions, technical guidelines, standards and policy suggestions will be proposed to promote the green development of the Yangtze River Basin. The location of the Yangtze River Basin and key areas of the Central Basin Component are shown in Figure 1-1.

Typical lakes (Dongting and Poyang Lakes) and tributaries (Jialing, Wujiang and Chishui Rivers) in the Yangtze River Basin are selected as focused areas of research (see the purple circles in Figure 1-1).

- Poyang Lake is the largest freshwater lake of China, located in northern Jiangxi Province, with an area of 4,125 km^2, connected to the Yangtze River in Hukou County, Jiujiang City;
- Dongting Lake is the fourth largest lake and second largest freshwater lake of China, located in northern Hunan Province, with an area of 2,820 km^2, connected to the Yangtze River on the east;
- The Jialing River is a tributary in the upper Yangtze River, running through Shaanxi, Gansu, Sichuan and Chongqing, connected to the Yangtze River in Chongqing, with a length of 1,345km;
- The Wujiang River is a tributary in the upper Yangtze River, running through Yunnan, Guizhou, Chongqing and Hubei, connected to the Yangtze River in Fuling;
- The Chishui River is a tributary in the upper the Yangtze River, running through Yunnan, Guizhou and Sichuan, connected to the Yangtze River in Hejiang County.

The TA activities of the Central Basin Component are summarized in Table 1-1.

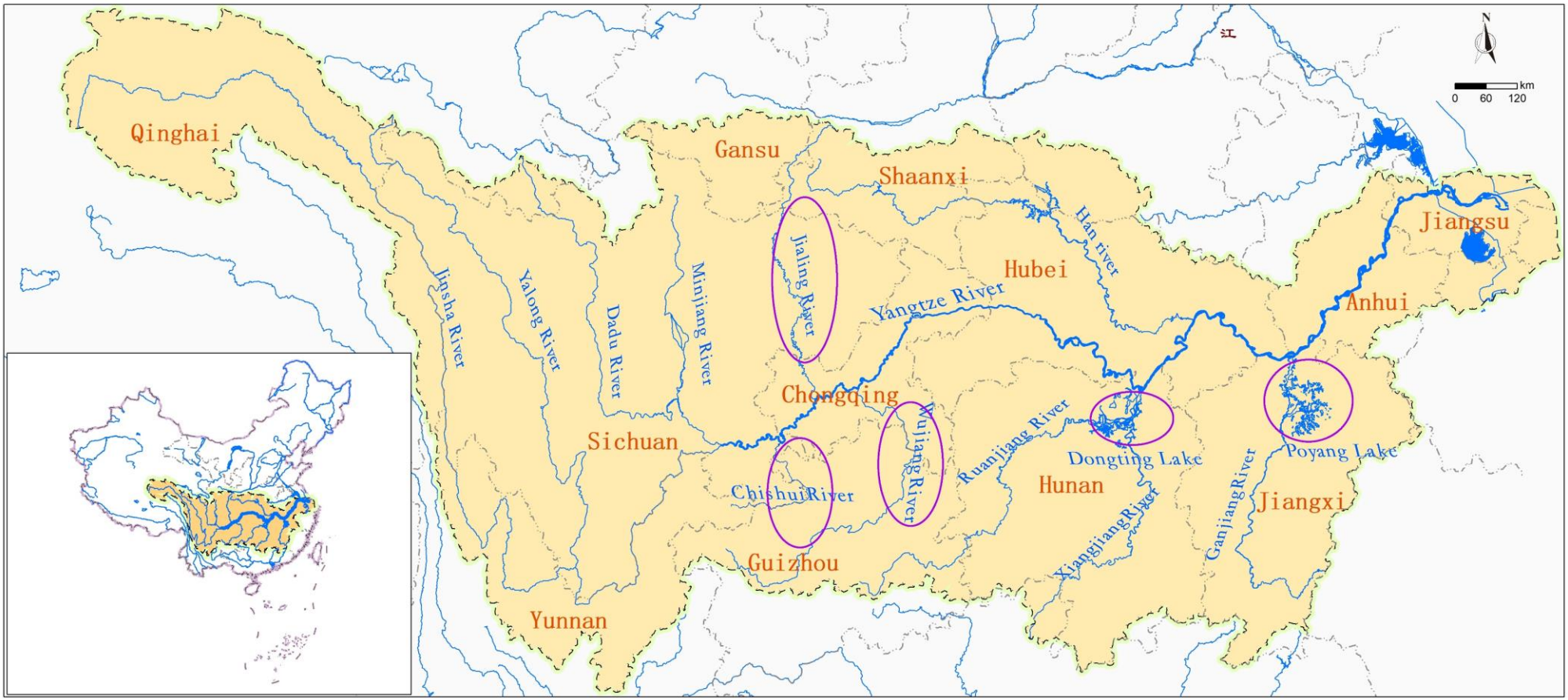

Figure 1-1 Research Focus Areas of the Central Basin Component

Table 1-1 TA Activities under the Central Basin Component

Sub-Component	Research Topic	Description
Water pollution screening and source tracing	Traceability analysis of the key pollutant (phosphorus) in the Yangtze River	Analyzing the spatial and temporal distribution of key pollutants in the Yangtze River, identifying key areas (watersheds) for key pollutant control (represented by total phosphorus), and the evolution of sediment flux and total phosphorus influx. Designing a traceability analysis technical system for key pollutants (phosphorus), identifying the non-point source of phosphorus pollution and building a response platform for emergency conditions when phosphorus exceeds standard.
	Study on phosphorus migration and transformation in the Yangtze River, and influencing factors	Studying the migration and conversion pattern of phosphorus, analyzing key influencing factors, and analyzing the carryover effect of water resources and hydropower projects on phosphorus, and the impact on the phosphorus pollution distribution in the basin, analyzing the influencing factors and the retention effect of water conservancy and hydropower construction on phosphorus.
	Study on a technical system for the prevention and control of total phosphorus in the Yangtze River	Reviewing domestic and overseas experience in regulatory mechanisms, and pollution prevention and control for total phosphorus emissions; studying phosphorus wastewater limits for enterprises in the Yangtze River Basin; designing a comprehensive regional total phosphorus prevention and control technical system.
	Traceability analysis and emergency prevention and control system of total phosphorus in the Yangtze River under extreme weather	Studying the source and emergency prevention and control system of total phosphorus in the Yangtze River under extreme weather conditions; identifying the point and non-point phosphorus sources under extreme weather; studying the hydrodynamic process and adsorption, migration and transformation mechanism of phosphorus, and the technical system for phosphorus pollution prevention and control.
Water ecosystem correlation research	Analysis of regional features and correlation of Yangtze River water ecosystems	Defining the overall ecological layout of the Yangtze River Basin, studying the correlation of ecological factors in typical ecological areas, and establishing an aquatic ecological network with mountains, waters, forests, fields, lakes and grasslands being key nodes
	Study on the relevance and stress effect of ecological elements	Analyzing and evaluating impacts of different types of human activities on the basin's ecology, and identifying key influencing factors and indicators under stress
	Study on water ecosystem restoration technology	Summarizing methods and features of different ecological protection and rehabilitation techniques, and proposing an integrated water and land protection and rehabilitation framework and governance plan covering all ecological factors of the Yangtze River Basin
	Policy suggestions for integrated mountain, river, forest, farmland, lake and grassland protection	Studying the establishment of a cross-sectoral collaborative protection mechanism, and a performance evaluation system for the typical ecological environment of the YREB, proposing policy suggestions on ecological flow

Sub-Component		Research Topic	Description
			supervision and management for medium and small rivers, and formulating technical guidelines for river and lake health assessment.
Study on protection and rehabilitation of key lake and tributary systems	Case analysis of protection and rehabilitation of two lake systems	Investigation and analysis of water ecological environment of Poyang and Dongting Lakes	Sorting out recent observation data and research findings on the aquatic ecological environment, studying the adaptation of aquatic ecosystems to lake changes, and analyzing the current aquatic ecological environment and changes of both lakes
		Study on the health assessment of the ecosystems of Poyang and Dongting Lakes	Establishing a health evaluation system for the aquatic ecological environment of both lakes, evaluating the health level of aquatic ecosystems, and establishing an appropriate wetland habitat model
		Study on the protection and rehabilitation technology and institutional arrangements for the ecosystems of Poyang and Dongting Lakes	Compiling and analyzing cases of aquatic ecosystem protection and rehabilitation, and institutional building for the Yangtze River Basin, establishing collaborative techniques for the aquatic ecosystem protection and rehabilitation of both lakes, and proposing a regional interactive management mechanism
		Study on water ecological protection and rehabilitation in key regions of Poyang and Dongting Lakes	Defining a health standard for the aquatic ecosystem protection and rehabilitation of both lakes, establishing an overall spatial layout for aquatic ecosystem protection and rehabilitation, and studying relevant models and measures
	Study on protection and rehabilitation of key tributary systems in the upper Yangtze River	Investigation and evaluation of water ecological environment of the Jialing and Wujiang Rivers	Investigating the aquatic ecological environment of the Jialing, Wujiang and Chishui Rivers, and analyzing the ecosystem health level distribution and evolution of the three rivers
		Study on protection and rehabilitation system of the Jialing and Wujiang River Basins	Developing the overall objectives and layout of the aquatic ecosystem protection and rehabilitation of the Jialing, Wujiang and Chishui Rivers, proposing suggestions to improve the water and soil conservation system, evaluating the integrated aquatic ecological environment governance system, establishing a rights and liabilities system for the aquatic ecological environment, and formulating guidelines on eco-compensation for the aquatic ecological environment of key tributaries in the upper Yangtze River
		Study on protection strategy for the Jialing and Wujiang River water ecosystems	Conducting research on the rehabilitation of river aquatic life passages and key aquatic habitats, ecology-oriented reservoir construction dispatching strategies, load balance-oriented water resources optimal allocation strategies, and mechanisms for aquatic ecosystem protection and rehabilitation
		Study on ecological protection and rehabilitation strategies of typical river segments	Establishing models and measures for the aquatic ecosystem protection and rehabilitation of the Jialing, Wujiang and Chishui Rivers, and models and measures for conducting protection and rehabilitation in key areas
Research on integrated solid waste utilization		Study on phosphorus slag treatment and comprehensive utilization technology	Developing modified phosphorus tailings rehabilitation techniques for heavy metal polluted sediment / soil, and studying the high-value utilization of phosphorus tailings

Sub-Component	Research Topic	Description
	Study on key technologies of manganese mines ecological rehabilitation	Conducting ecological rehabilitation studies in manganese mining areas, and developing a set of systematic and sustainable manganese ore ecological rehabilitation techniques
	Study on integrated technology of organic solid waste utilization	Proposing a technical solution for toxic / hazardous substance reduction and recycling, and developing techniques for the safe and efficient recycling and utilization of organic solid waste
	Study on technology of inorganic solid waste utilization	Developing refined pretreatment techniques to sort out inorganic solid waste efficiently, and whole-chain inorganic solid waste processing techniques
Research on value realization mechanisms of ecological products	Ecological product investigation and status identification	Conducting ecological product investigation and data collection to learn their current situation
	Study on ecological product investigation and monitoring mechanism	Studying ecological product investigation and monitoring methods, and proposing policy suggestions on establishing a sound title identification and registration system
	Study on the valuation mechanism of ecological products	Establishing a valuation indicator system and approach for ecological products, and valuation standards, and studying the possibility of ecological product valuation into economic evaluation or environmental impact assessment
	Study on the operation and development mechanism of ecological products	Summing up ecological product operation and development paths and models in different places, analyzing key issues, and conducting development pattern research
	Study on protection and compensation mechanism of ecological products	Providing research inputs/advice for potential establishment of ecological protection and compensation mechanisms in different parts of the Yangtze River Basin, and proposing a compensation and punishment mechanism based on quantitative indicators of ecological damage
	Study on the key issues of the value realization mechanism of aquatic ecological products	Providing research inputs/advice for options for optimizing the spatial allocation of water resources through cross-regional water diversion work, studying ecological value realization mechanisms for water resources projects, and studying water rights trading mechanisms
Capacity building, and international exchanges and training	Promoting the enforcement of river and lake chiefs in the Yangtze River Basin	Enhancing the cooperation mechanism of river and lake chiefs in the Yangtze River Basin, carrying out workshops and discussions on the mechanism of rive and lake chiefs in the Yangtze River Basin, and conducting research on the mechanism for promoting trans-provincial river and lake chiefs.
	International exchanges and training on coordination and management system for river and lake protection and governance	Conducting exchanges on collaborative protection and governance of key rivers and lakes both at home and abroad
	Discussions and exchanges on collaborative governance of rivers and	Studying collaborative governance and protection systems and policies for lakes and rivers, giving publicity to the green development concept, and promoting green development

Sub-Component	Research Topic	Description
	lakes, and promotion of green development systems and policies	
	Study on YREB Resource and environmental supervision and management information sharing mechanism	Conducting current data investigation and evaluation, studying indicator systems for resource and environmental supervision and management, mechanisms for supervision and management data gathering, and data sharing techniques.
	Extension and publicity of project outcomes	Expanding knowledge sharing, promoting project outcome implementation, and conducting publicity

1.3 Organization and Implementation Arrangements

A **Program Leading Group (PLG)** will be established under the Department of Infrastructure Development of the National Development and Reform Commission (NDRC), composed of members from the ministries and commissions concerned. The PLG will be responsible for overall guidance and coordination of the Project and provide guidance on the top level design of the Project.

A **central program management office (CPMO)** is proposed to be established for the Central Basin Component within the NDRC YREB Office in the Department of Infrastructure Development[1], supported by Changjiang (Yangtze) Water Resources Commission (CWRC). The CPMO is responsible for the overall management of the Central Basin Component, cross-regional / sectoral coordination, and liaison with the World Bank. The CPMO will also be responsible for the implementation of the Central Basin Component.

The CPMO will also establish an **Expert Advisory Committee**, which will consist of experienced experts in water resources, ecology, environmental protection, socio-economy, information technology, etc. The expert advisory committee, under the authorization of PLG, will provide technical advice on the key issues of TA studies.

1.4 Purpose of this ESMF

The purpose of this ESMF is to provide a framework for the Central Basin Component which specifies the procedures and requirements for the E&S risks and impacts management of the TA activities, including:

- Conducting preliminary E&S risks and impacts screening on the proposed TA activities and identify the overall E&S risk level;
- Identifying appropriate E&S risks and impacts (direct[2], indirect[3] and cumulative[4] downstream impacts) management tools as per the requirements of the ESF;
- Developing E&S risk management procedures, including the preparation, review and approval and implementation of E&S documents, stakeholder engagement and information disclosure;
- Reviewing the E&S management capacity of the CPMO, and develop a capacity training plan;
- Proposing project monitoring and reporting requirements.

1.5 Methods for ESMF Preparation

This ESMF is prepared in accordance with the Bank ESF and ESSs, and China's applicable

[1] The administrative arrangement to formalize the organizational set-up for CPMO is to be confirmed before the end of Appraisal.

[2] A direct impact is an impact which is caused by the project and occurs contemporaneously in the location of the project.

[3] An indirect impact is an impact which is caused by the project and is later in time or farther removed in distance than a direct impact, but is still reasonably foreseeable, and will not include induced impacts.

[4] A cumulative impact is an incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time.

laws and regulations using the following methods:

1) Information collection: Local background E&S information was collected, including laws and regulations on E&S management;
2) Stakeholder engagement: Stakeholders were identified, and their needs for the Central Basin Component and potential E&S impacts on them were learned by means of interview, FGD and questionnaire survey;
3) Analysis and evaluation: E&S risks and impacts were analyzed in depth based on information collected, and fieldwork and stakeholder engagement results to prepare relevant documents, including this ESMF.

2 Environmental and Social Baseline

2.1 Environmental Baseline

The Yangtze River is the longest river in China with a total length of 6,387 km and an area of 1.8 million km^2, accounting for 19% of China's land area. The basin includes 19 provinces (autonomous regions / municipalities directly under the central government). There are numerous landforms in the basin, in which hills, plateaus and mountains account for 84.7%, plains for 11.3%, and water surfaces for 4%.

The total annual water resources of the basin is 995.8 billion m^3, accounting for about 35% of China's total water resources. The Yangtze River not only feeds 400 million people along the river, but also benefits vast areas of northern China through the South-to-North Water Diversion Project. The Yangtze River Basin is vital to China's manufacturing, food and energy security, and inland water transport industries. The Yangtze River Basin is also the main source of manganese and phosphorus resources in China, mainly distributed in Hubei, Yunnan, Guizhou, Sichuan and Hunan provinces.

The Yangtze River system is developed, with over 7,000 tributaries of varying sizes, in which 49 have a catchment area of over 10,000km^2. There are many lakes in the Yangtze River Basin, mostly in the middle and lower reaches, especially Dongting, Poyang, Chao and Tai Lakes. The basin has forest coverage of 41.3%, and its wetland area accounts for 20% of that of China. The basin is a natural treasury of fish and endangered aquatic wildlife, including over 400 fish species, 166 unique fish species, and 9 key aquatic wildlife species protected by the state. The basin has strong water conservation, breeding, oxygen release, carbon fixation and purification functions, and is an important ecological security barrier of China. Poyang Lake area and Dongting Lake area are the two largest international migratory bird habitats in Asia. Poyang Lake area is rich in flora and faun resources, with 20 species of birds under national protection. As a vast freshwater wetland in China, Dongting Lake wetland is listed as "international important wetland". With complex vegetation types, it is an important habitat for a variety of rare waterfowl.

Pollution remains one of the biggest threats to the environmental sustainability of the basin along with related economic outcomes. Some tributaries have poor water quality, and the eutrophication of some lakes has not been effectively controlled. According to 2020 Yangtze River water environmental report, the main pollutants that exceed applicable standards include ammonia nitrogen, total phosphorus, COD, BOD_5, and permanganate index. For rcent years, along with the progress of water pollution control efforts, obvious achievement has been made in terms of reduction of COD and ammonia nitrogen, while, the progress on phosphorus reduction is rather weak which has led to eutrophication issues of lakes and reservoirs. Phosphorus has been the main pollutant in the water bodies of the Yangtze River economic belt. Total phosphorus exceeds the standard in some key water quality monitoring sections, resulting in eutrophication problems of lakes and reservoirs, such as Min River, Tuo River, Wu River, and Xiangxi River of the Three Gorges Reservoir area. Total phosphorus pollution in the Yangtze River economic belt mainly results from industrial point sources, agricultural non-point sources and other pollution sources, and mainly involves Sichuan, Chongqing, Guizhou, Hubei, and Hunan.

In response, the Government has implemented a number of measures to ensure the

ecological protection of the Yangtze River. In May 2016, the NDRC released the Development Plan of the Yangtze River Economic Belt (YREB), emphasizing the overall objectives of prioritizing ecological protection, river basin coordination and integrated development among the 11 provinces in the YREB. In 2019, NDRC with the Ministry of Ecology and Environment (MEE) released the Action Plan for Yangtze River Protection and Rehabilitation , which aims to promote the comprehensive treatment of "three phosphorus", and strengthen the management of solid wastes. On March 1, 2021, the Yangtze River Protection Law came into effect, which calls for a national Yangtze River Basin coordination mechanism, and obliges national line agencies and provinces to undertake a range of activities, including improving systems for information sharing, addressing water quality and pollution control, enhancing water resources conservation, as well as establishing ecological flows and standards for biodiversity protection.

2.2 Socioeconomic Baseline

The Yangtze River Basin spans the southwest, central and eastern China economic regions, and 19 provinces (autonomous regions / municipalities directly under the central government)[5], in which the provinces (municipalities directly under the central government) with over 95% of land area within the basin are Sichuan, Chongqing, Hubei, Hunan, Jiangxi and Shanghai, the one with 50-70% of the land area within the basin is Guizhou; those with 25%-50% of the land area within the basin are Shaanxi, Anhui, Jiangsu, Yunnan; and those with 10%-25% of the land area within the basin are Qinghai, Zhejiang and Henan; Gansu, Guangxi, Guangdong, Fujian and Tibet provinces (autonomous regions) have smaller proportions of land area within the basin.

The region along the middle and lower Yangtze River Basin, and the Sichuan Basin have become important economic regions of China, where the lower Yangtze River economic region centered on Shanghai and Nanjing, the middle Yangtze River economic region centered on Wuhan, and the upper Yangtze River economic region centered on Chongqing and Chengdu have formed. The Yangtze River Basin is developing rapidly in industry and agriculture, and developed in traffic, and plays an important role in China's economic and social development. The YREB[6] is within the Yangtze River Basin. The geographic scope of the Central Basin Component includes the provinces / municipalities covered by the YREB.

1) Population and ethnic minorities

The Yangtze River Basin has a population of about 459 million, accounting for 1/3 of China's population. The Yangtze River Basin is densely populated, with an average population density of 220 people/km^2, in which the population density of the Yangtze River Delta, Chengdu Plain, and the middle and lower Yangtze River plain is 600-900 people/km^2, and that of Shanghai over 4,600 people/km^2, being the most densely populated region of China.

There are 14 autonomous prefectures and 32 autonomous counties in the Yangtze River

[5] The trunk stream of the Yangtze River runs through Qinghai, Tibet, Sichuan, Yunnan, Chongqing, Hubei, Hunan, Jiangxi, Anhui, Jiangsu and Shanghai provinces (autonomous regions / municipalities directly under the central government), with hundreds of tributaries extending to Guizhou, Gansu, Shaanxi, Henan, Guangxi, Guangdong, Zhejiang and Fujian provinces (autonomous regions).

[6] The Outline of the YREB Development Plan was promulgated in September 2016. The YREB involves 11 provinces (municipalities directly under the central government) in the Yangtze River Basin, namely Yunnan, Sichuan, Guizhou, Chongqing, Hunan, Hubei, Jiangxi, Anhui, Zhejiang, Jiangsu and Shanghai.

Basin, mostly along the upper Yangtze River. There are over 50 ethnic minorities with a total population of over 20 million in the Yangtze River Basin, in which Tujia, Miao, Yi, Dong, Tibetan and Hui have a population of over 1 million. These ethnic minorities live in the Yunnan-Guizhou Plateau, Tibet-Qinghai Plateau, western Sichuan, western Hunan and western Hubei.

2) Land utilization and agriculture

The distribution of land uses in the Yangtze River Basin reflects natural, economic, geological and ecological conditions of different areas.

The Yangtze River Basin has a long history of land development, where over 50% of land area is cultivated area, and most cultivated land is irrigated land, mostly in the Sichuan Basin, Dongting Lake Plain, Jianghan Plain, Poyang Lake Plain, Tai Lake Plain, and lower Yangtze River Plain, along rivers and in river valleys. Paddy rice is cultivated in these areas mainly, and crops are yielded twice or three times a year. The Yangtze River Basin is an important production base of food crops, cotton and oil crops of China.

The Yangtze River Basin has a cultivated land of 462 million mu, in which most is located in the east part of the basin below Yibin, especially in the middle and lower Yangtze River. Although the cultivated area of the basin is just 1/4 of China's gross cultivated area, its grain output is 34% of that of China, and its paddy rice output is 70% of that of China. The Chengdu Plain, Jianghan Plain, Dongting Lake Plain, Poyang Lake Plain, Chao Lake Plain and Tai Lake Plain in the basin are important commodity grain bases of China. The Yangtze River Basin has a variety of commercial crops, where its cotton output is over 1/3 of that of China, and its rapeseed, sesame, silk, tealeaf and tobacco outputs are dominant in China. The outputs of paddy rice, rapeseed, tung oil and citrus in Sichuan, sesame in Hubei, tea and bamboo in Hunan, Jiangxi and Zhejiang, etc. rank the first in China.

The Jinsha, Minjiang and Dadu River watersheds in the upper Yangtze River, and the upper Jialing River are an important part of China's southwestern forest region. There are many hills and forests in the middle and lower Yangtze River, where there are many commercial trees, including pine, fir, tea, tung oil, and bamboo. The basin's timber volume is about 1/4 of that of China.

Due to differences in natural, economic and social conditions, there are different characteristics in agricultural production in the upper, middle and lower Yangtze River, where agricultural output value is relatively higher in the lower Yangtze River.

The upper Yangtze River is developed in stockbreeding, where per capita meat output ranks top in the whole basin, while the middle and lower Yangtze River is developed in cultivation and aquaculture, where per capita grain, cotton, oil and freshwater fish outputs are high.

The Yangtze River Basin is the most important agricultural base of China, where cultivated land accounts for 25% of that of China, and annual livestock output is over 340 million, accounting for over 50% of that of China. However, such problems as high fertilization intensity, unscientific cultivation and stockbreeding patterns, and irrational land utilization exist. There are also significant regional differences in phosphorus pollution in the Yangtze River Basin, with agricultural phosphorus pollution dominant in the lower Yangtze River, and

stockbreeding phosphorus pollution dominant in the upper Yangtze River[7].

3) Economic development

The Yangtze River Basin has a comprehensive and balanced industrial system, and numerous industrial bases (steel, non-ferrous metals, machinery, petrochemical, oil refining, power, light textile, etc.). The basin boasts a high-quality and highly skilled labor force, and developed traffic, providing reliable support for industrial production.

The Yangtze River Basin has a very developed phosphorus chemical industry focused on phosphate mining. There are over 500 phosphorus chemical enterprises of different sizes in China, of which 199 are in the Yangtze River Basin. Phosphate mining and phosphorus chemistry have significant impacts on the aquatic environment[8].

According to the Outline of the YREB Development Plan promulgated in September 2016, the YREB is the longest, broadest and most influential economic belt of China, and plays a crucial role in China's regional development. The 11 provinces (and municipalities directly under the central government) covered by the YREB are an integral part of the Yangtze River Basin.

In 2019, the total GDP of the 11 provinces (autonomous regions / municipalities directly under the central government) in the YREB (full administrative divisions, including parts out of the Yangtze River Basin) was 45.8 trillion yuan, accounting for 46.2% of China's GDP, and per capita GDP was 78,276 yuan, higher than the national average by 7,400 yuan. See Table 2-1.

[7] Wei Xindong, et al. Study on features of agricultural non-point-source phosphorus pollution in the Yangtze River Basin, and prevention and control techniques. Journal of Jilin Jianzhu University, April 2021.

[8] Qin Yanwen, et al. Total phosphorus pollution in the Yangtze River Basin: Distribution – source analysis – control measures, Research of Environmental Sciences, January 2018.

Table 2-1 Socioeconomic Profile of the YREB in 2019

(Th data is for whole administrative region, including parts out of the Yangtze River Basin)

No.	Segment	Province (autonomous region / municipality)	Population (0,000)			GDP (00 million yuan)				Per capita GDP (yuan)	Per capita disposable income (yuan)		Per capita nonproductive expenses (yuan)	
			Gross	Urban	Rural	Total	Primary industries	Secondary industries	Tertiary industries		Urban residents	Rural residents	Urban residents	Rural residents
1	Upper	Yunnan	4858	2376	2482	23223.75	3037.62	7961.58	12224.55	47944	36237.7	11902.4	23454.9	10260.2
2		Sichuan	8375	4505	3870	46615.82	4807.24	17365.33	24443.25	55774	36153.7	14670.1	25367.4	14055.6
3		Chongqing	3124	2087	1037	23605.77	1551.42	9496.84	12557.51	75828	37938.6	15133.3	25785.5	13112.1
4		Guizhou	3623	1776	1847	16769.34	2280.56	6058.45	8430.33	46433	34404.2	10756.3	21402.4	10221.7
5	Middle	Hubei	5927	3615	2312	45828.31	3809.09	19098.62	22920.6	77387	37601.4	16390.9	26421.8	15328
6		Hunan	6918	3958	2960	39752.12	3646.95	14946.98	21158.19	57540	39841.9	15394.8	26924	13968.8
7		Jiangxi	4666	2679	1987	24757.5	2057.56	10939.83	11760.11	53164	36545.9	15976.3	22714.3	12496.7
8	Lower	Anhui	6366	3553	2813	37113.98	2915.7	15337.9	18860.38	58496	37540	15416	23781.5	14545.8
9		Jiangsu	8070	5698	2372	99631.52	4296.28	44270.51	51064.73	123607	51056.1	22675.4	31329.1	17715.9
10		Zhejiang	5850	4095	1755	62351.74	2097.38	26566.6	33687.76	107624	60182.3	29875.8	37507.9	21351.7
11		Shangahi	2428	2144	284	38155.32	103.88	10299.16	27752.28	157279	73615.3	33195.2	48271.6	22448.9
	YREB (subtotal)		60205	36486	23719	457805.17	30603.68	182341.8	244859.69	/	/	/	/	/
	China		140005	84843	55162	990865.1	70466.7	386165.3	534233.1	70892	42358.8	16020.7	28063.4	13327.7
	Percent (%)		43.0%	43.0%	43.0%	46.2%	43.4%	47.2%	45.8%					

Source: China Statistical Yearbook 2020

3 E&S Legal Framework

The implementation of the Central Basin Component needs to comply with the requirements of the Bank's ESF, and China's domestic laws and regulations in the field of environmental and social risk management. This chapter summarizes the applicable requirements of the Bank ESF in the Central Basin Component, and summarizes China's existing environmental and social management laws and regulations, technical specifications, and applicable standards that are most relevant to the Central Basin Component. These constitute the legal basis of this ESMF, and apply to the identification, preparation and implementation of activities.

3.1 Bank ESF

The Bank ESF applies to the Central Basin Component. Based on screening of the E&S risks/impacts, the following eight E&S Standards (ESSs) are considered relevant to the Central Basin Component, i.e. ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7 and ESS10.

Table 3-1 Applicability of World Bank ESSs

No.	ESS	Applicable?	Relevance analysis
1	ESS1: Assessment and Management of Environmental Risks and Impacts	Yes	- The Central Basin Component activities are TA activities, and do not involve any physical works. There are no direct E&S risks and impacts from the studies themselves, however, some research suggestions, if adopted and implemented, may have indirect downstream E&S risks and impacts. - An ESMF and SEF are developed as E&S management tools for the Project. In addition, as part of the legal agreement, the ESCP includes commitments to key E&S actions and measures. - The CPMO will conduct continuous stakeholder engagement and information disclosure during ESMF and SEF preparation, and throughout Component implementation.
2	ESS2: Labor and Working Condition	Yes	- The Central Basin Component does not involve physical works, and does not involve primary supply workers and community workers. It only involves direct workers of the CPMO and TA implementation agency workers (technical, research and management staff). - Some research suggestions, once implemented, may lead to downstream activities that will involve all types of workers. - The consulting agency is usually a large research institute or university with sound labor management measures, a good working environment, a well-established trade union, and a sound worker GRM, workers are well-educated to protect themselves, the procurement will be conducted through a conforming bidding procedure, a procurement contract signed, and funds paid on time. The E&S risks of the TA activities mainly include health and safety risks in fieldwork, and timely payment of full travel subsidies. In general, the overall labor risk rating of the TA activities is moderate.

No.	ESS	Applicable?	Relevance analysis
			- Annex 2 of ESMF -tentative TOR outline- specifies the requirements for managing labor-related risks for workers engaged in the TA studies. - During the process of bidding, the TA implementation agencies will clarify the measures and actions (as part of the TA work plan) to address the potential labor and working condition risks for workers engaged in the TA studies. - During implementation, labor management risks of the Central Basin Component will be tracked in E&S monitoring.
3	ESS3: Resource Efficiency and Pollution Prevention and Management	Yes	- All activities under the Central Basin Component are research and capacity building activities, and do not involve resource efficiency, and pollution prevention and management. Some research suggestions, once implemented, may lead to downstream activities related to resource efficiency, and pollution prevention and management, so an appropriate analysis should be made in the research process.
4	ESS4: Community Health and Safety	Yes	- All activities under the Central Basin Component are research and capacity building activities, and do not involve community health and safety risks. Some research suggestions, once implemented, may lead to downstream activities related to resource efficiency, and pollution prevention and management, so an appropriate analysis should be made in the research process. - In the course of the pendemic, the TA activities shall take into account the risks COVID-19 or other communicable diseases during the period of field work/research.
5	ESS5: Land Acquisition, Restriction on Land Use and Involuntary Resettlement	Yes	- All activities under the Central Basin Component are research and capacity building activities, and involve no physical works, and no land acquisition and resettlement (LAR). - Some research suggestions, once implemented, may lead to downstream activities involving downstream land acquisition, restriction on land use and involuntary resettlement risks, to which the TORs and output reports will formulate the suggestions and principles to manage land acquisition and resettlement risks aligning with ESS5.
6	ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes	- All activities under the Central Basin Component are research and capacity building activities, and do not involve direct impacts of biodiversity conservation and sustainable management of living natural resources. However, some research suggestions, once implemented, may indirectly lead to downstream activities related to biodiversity conservation and sustainable management of living natural resources, so

No.	ESS	Applicable?	Relevance analysis
			an appropriate analysis should be made in the research process.
7	ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Yes	- The Central Basin Component will cover the Yangtze River Basin. According to the China Statistical Yearbook 2020, there are 14 autonomous prefectures and 32 autonomous counties in the Yangtze River Basin, mostly along the upper Yangtze River. There are over 50 ethnic minorities with a total population of over 20 million in the Yangtze River Basin, in which Tujia, Miao, Yi, Dong, Tibetan and Hui have a population of over 1 million. - Some research suggestions, once implemented, may lead to potential downstream activities that may involve and affect minority communities. - Ensure that minority residents participate in the Central Basin Component, meaningful consultation is conducted with them, and their suggestions incorporated into the Central Basin Component activities and outputs, thereby ensuring that they are fully respected in and benefit equally from future downstream activities. The engagement requirements for ethnic minorities have been included in the SEF.
8	ESS8: Cultural Heritage	Yes	- All activities under the Central Basin Component are research and capacity building activities, and do not involve physical works, so they will not have any direct impact on cultural heritage. However, ESS8 is considered relevant because implementation of TA recommendations may involve physical investments that potentially impact known and unknown cultural heritage.
9	ESS9: Financial Intermediary (FI)	No	- The Central Basin Component does not involve FI, therefore, this ESS does not apply.
10	ESS10: Stakeholder Engagement and Information Disclosure	Yes	- Information disclosure and consultation will run through the preparation and implementation stages of the Central Basin Component. - During preparation, an Stakeholder Engagement Framework (SEF) has been developed; and, - During the implementation, the TOR will specify the requirements for stakeholder engagement proportiaonte to each TA activity. As part of the TA work plan, the TA implementation agencies will prepare detailed arrangement for stakeholder engagement before start-up of TA. CPMO will require TA implementation agencies to keep disclosing necessary information and engaging all stakeholders throughout the lifecycle of the Central Basin Component, with special focus on vulnerable groups and ethnic minorities, and providing timely, relevant, understandable and accessible information to the stakeholders. In addition, a

No.	ESS	Applicable?	Relevance analysis
			GRM is also included in the SEF at the CPMO's level and TA implementation agencies' level. - The TA output reports will include appropriate suggestions (or a plan) on how stakeholders would be engaged during future enforcement of TA recommendations.

The Bank ESF also requires the application of relevant requirements of the Bank Group Environment, Health and Safety Guidelines (EHSGs)[9]. When any different level or measure is proposed in the domestic regulations and regulations, the more stringent one will apply. The EHSGs include normally acceptable and achievable performance levels and measures related to environment, health and safety concerns. As some of the study suggestions will lead to potential downstream activities which may involve potential downstream environmental, health and safety risks and impacts. These will be considered in the TORs and output reports, in which compliance with the EHSGs will also be reflected.

3.2 Environmental Legal Framework of China

Since the promulgation of its first Environmental Protection Law in 1979, China has gradually established a comprehensive environmental management framework, which includes more than 80 laws, over 120 regulations and over 1000 standards and technical guidelines at the national level primarily addressing pollution control, natural resource conservation and management of the environment. In addition, there are also a large number of regulations and implementation plans at local levels. Many local environmental and emission standards are more stringent than national standards. See Table 3-2.

In general, China has established a comprehensive environmental impact assessment system for construction projects and certain types of plans, and similar comprehensive systems for work safety and occupational health management. However, there are no explicit legal requirements for E&S considerations for technical studies and capacity building activities. During the implementation of The Central Basin Component, the CPMO will follow the Bank ESF and relevant guidelines[10] to manage the E&S risks/impacts of the TA activities under the Central Basin Component.

Table 3-2 Applicable National Environmental Laws, Regulations and Policies

No.	Law/regulations	Version	Relevance
I. General environmental protection and pollution control laws			
1	Environmental Protection Law	2015-01-01	The fundamental and known as the "most stringent ever" environmental law ever in China. It sets out the general principle of environmental protection and sets up key systems of environmental management.
2	Environmental Impact Assessment Law	2018-12-29	It requires construction projects and certain types of plans to be subject to requirements of environmental impact assessment, public participation and development of mitigation measures to avoid, reduce and mitigate adverse impacts.

[9] www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuideline.

[10] OESRC Advisory Note: Technical Assistance and the Environmental and Social Framework (May 21, 2019).

No.	Law/regulations	Version	Relevance
3	Water Pollution Control Law	2018-10-26	This national law for surface/ground water pollution control applies to all types of projects and facilities with wastewater pollution.
4	Solid Waste Pollution Control Law	2020-04-29	It presents pollution control requirements covering domestic waste, industrial solid waste, construction waste, agricultural waste and hazardous wastes.
5	Circular Economy Promotion Law	2018-10-26	It is a basic law for promoting waste reduction, reuse and resource recycling. It encourages establishment of waste recycling system.
6	Noise Pollution Control Law	2018-12-29	This law establishes legal requirements for noise pollution control for industrial facilities, construction activities, traffic, and social ambient noise.
7	Soil Pollution Control Law	2018-08-31	It requires protection of soil and prevention of soil pollution by all individuals and organizations. Effective measures should be taken for solid waste collection, transfer and disposal activities under The Central Basin Component to prevent or reduce soil pollution.
8	Soil Conservation Law	2010-12-25	It requires that prevention and mitigation measures beta taken for all activities that can cause soil erosion.
9	Yangzte River Protection Law	2020-12-26	It is the first legislation for a specific river basin in China. It was formulated to strengthen the protection and restoration of the ecological environment in the Yangtze River basin, establishing a National Yangtze River Basin Coordination Mechanism and inferring obligations on the national line agencies and provinces to align with its goals of ecological protection and improved water quality. The law calls for local governments to establish water quality baselines, prepare total phosphorus pollution control plans, reduce pollutant discharge through investments in wastewater treatment facilities and piped networks, prevent and control agricultural non-point source pollution, including through the promotion of organic fertilizers and control of agricultural plastic film. The law also calls on governments to protect and restore ecological function and biodiversity (including through ecological flows), and improve systems for information sharing and interjurisdictional coordination.
II. Laws and regulations on occupation health and safety			
10	Labor Law	2018-12-29	General requirements for occupational health and safety risk management, including clarification of the parties and responsibilities, management process and penalties for non-compliance.
11	Contract Law	1999-10-01	
12	Work Safety Law	2014-12-01	
13	Occupational Disease Prevention Law	2017-11-05	
14	Guidelines for Prevention and Control of Occupational Diseases by Employers	2010-08-01	Methods and technical guidelines for OHS risk management in China.
15	Occupational Health and Safety Management System Requirements and Guidelines	2018-03-12	
16	Occupational Disease Hazard Reporting Measures	2012-06-01	

No.	Law/regulations	Version	Relevance
17	Classification of Occupational Exposure to Hazardous Material	2010-11-01	
18	Occupational exposure limits for hazardous agents in the workplace – Chemical agents	2007-11-01	
19	Occupational exposure limits for hazardous agents in the workplace – Physical agents	2007-11-01	
20	Management Rules for Emergency Response Plans for Work Safety Accidents	2009-05-01	
21	Regulations on Accidents Reporting and Investigation	2007-06-01	

3.3 Social Legal Framework of China

Appropriate social management systems have been established in China, including a management system for social risks, a social management system for land acquisition (LA) and house demolition (HD), a minority management system, a labor management system, and an information disclosure system.

Social risk management system: The social risk management system of a project requires that the project must be aligned with the basic interests of most people, and major decisions, major fixed asset investments and LA should be subject to social stability risk assessment. A sound management organization has been established for project social stability risk assessment in China. The owner should prepare or appoint a consulting agency to prepare the social stability risk assessment report; the local government should review and evaluate such report.

China's requirements for social stability risk assessment are partly consistent with the SIA requirements in ESS1. China's social stability risk assessment pays more attention to social stability risks arising from project construction and decision-making, but less attention to social inclusiveness and sustainability management. To strengthen the Project's social risk management, realize its social objectives, and promote social fairness, inclusiveness and sustainable development, social risks should be identified and screened in component consulting and research, paying particular attention to downstream impacts of consulting results, including restriction on land use, change of land use, labor and working conditions, community health and safety, inadequate stakeholder engagement, minority impacts, etc.

Labor risk management: Employers should sign employment contracts with laborers on a voluntary basis to define both parties' rights and obligations. The Labor Law of the PRC (amended in 2018), the Labor Contract Law (amended in 2012), and the Special Provisions on Labor Protection of Female Employees are complied with strictly. Salaries shall be based on work, and equal pay shall be paid for equal work. The average working hours of workers shall not exceed 44 hours per week or 8 hours per day. Juvenile workers (16-18 years old) should not be involved in overtime working. When an employer and a laborer have a dispute over the labor contract, the laborer may settle the dispute itself, fully consistent with the requirements of ESS2.

However, China's labor policies do not require worker classification as required in ESS2, and do not require that an LMP be prepared on the project level. The TA implementation agency will adopt and implement a series of personnel policies based on the Labor Law and Labor Contract Law. This ESMF makes a preliminary assessment of the CPMO's labor management systems and practices (see ***Appendix 1***). Based on this assessment, the CPMO has a sound labor management system, including working conditions and worker relationships, labor protection, GRM, and occupational health and safety (OHS) management for direct workers; the CPMO has no forced or child labor. The TA implementation agency is usually a large research institute or university, similar to CPMO, with sound labor management measures, a good working environment, a well-established trade union, and a sound worker GRM, workers are well-educated to protect themselves. The E&S risks of the TA activities mainly include health and safety risks in fieldwork, and timely payment full travel subsidies risk.

The review of labor management system (in Annex 1) concluded the CPMO does not have in place system to manage contracted workers (i.e. workers engaging in TA studies). The labor risks associated with workers of TA implementation agencies would be moderate and mainly related to health and safety risks in fieldwork and whether the payment of travel subsidies can be paid in full and timely as per laws and regulations. According to nature of TA studies, the workers, while traveling to remote areas to do field study, are potentially exposed to the risks of traffic accident, drowning, contracting local communicable diseases, and COVID-19 risks.

TORs are normally treated as an effective entry point for the CPMO to set out legally binding requirements for the TA implementation agencies to enhance labor management practice to protect the health, safety, benefits and wellbeing for the workers engaging in TA studies.

During the implementation, the CPMO will identify worker safety impacts and propose management requirements accordingly in the TORs, and ask the relevant staff to attend E&S training organized by it to enhance management of relevant labor risks. During the process of bidding, potential TA implementation agencies will clarify the measures and actions (as part of the TA work plan) to address the potential labor and working condition risks for workers engaged in the TA studies. CPMO will carry out semi-annual monitoring to follow up on the worker performance with the TA implementation agencies.

Stakeholder engagement: The Opinions of the General Office of the State Council on Advancing Public Disclosure of Government Information in the Field of Approval and Implementation of Major Construction Projects, and the Opinions of the General Office of the State Council on Advancing Public Disclosure of Government Information in the Public Resource Allocation Field require that major decisions and surveys should cover all local stakeholders, and fully collect their opinions, and information should be disclosed to the public as much as possible so as to improve the transparency and efficiency of the approval and implementation of projects.

China's policies and practices do not require that an SEP be developed and implemented at the project level to describe stakeholder engagement timing and methods. Therefore, an SEF was developed during Central Basin Component preparation to direct the CPMO and TA implementation agencies to identify project-affected parties and other stakeholders (including vulnerable groups and ethnic minorities), conduct meaningful consultation, and provide timely,

relevant, understandable and accessible information to stakeholders, disclosure the project design and E&S impact mitigation measures to them, and include their opinions and suggestions into the research outputs, thereby ensuring that they benefit from the Central Basin Component.

LAR: For LAR, China has established a complete legal framework, including the Land Administration Law of the PRC (3rd amendment, August 26, 2019), and the Regulations on the Expropriation of Buildings on State-owned Land and Compensation (January 21, 2011, Decree No.590 of the State Council). Local governments at different levels have promulgated local regulations and policies within the above framework to regulate and direct local LAR. In general, the compensation and resettlement requirements of China's laws, regulations and practices (e.g., compensation at replacement cost) are consistent with Bank ESS5. The main gaps are: 1) There is no special requirement for resettlement Action Plan (RAP) preparation except for major hydropower projects; 2) There is no social audit requirement for land acquired in the past and to be used for the project; 3) There is no monitoring and evaluation requirement (including third party monitoring of displaced persons' living standard) except for major water resources projects.

Ethnic minorities: China has promulgated the Law of the PRC on Regional National Autonomy, Regulations of the PRC on Administrative Work of Minority Townships, 13th Five-year Plan for Ethnic Minority Programs, Regulations on Urban Minority Work, etc., with the aim of fully respecting the dignity, powers, economy, cultures, equality and development of ethnic minorities, and paying special attention to them to protect their rights and interests, and improve their economic and social status. However, the applicable policies make no provision on the following activities on the project level: 1) meaningful consultation with minority residents and communities during project preparation, design and implementation; 2) free, prior and informed consent (FPIC), and 3) the preparation of an ethnic minority development plan (EMDP).

To ensure that minority residents are consulted meaningful in a culturally appropriate manner and benefit from the Central Basin Component, the minority participation requirements have been included in the SEF, which will be translated into the stakeholder engagement plan for relevant TA activities during the implementation.

Considering the relevance of the ESSs in the Central Basin Component the following social laws, regulations and policies apply.

Some of these laws, regulations and technical standards are outlined in Table 3-3. It should be noted that these laws, regulations and technical standards are indicative, and the exact applicable legal framework should be finalized and analyzed in detail in the E&S assessment tool, and appropriate mitigation measures developed.

Table 3-3 Applicable National Social Laws and Regulations

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
I. General laws on social risk management					
1	Interim Regulations on Major Administrative Decision-making Procedures	2019	Major administrative decisions shall be made under the principle of democratic decision-making, opinions shall be fully solicited from all parties, and it shall be guaranteed that the people participate in decision-making through various channels and form. If any major administrative policy may affect social stability and public security adversely, the undertaker or any other agency responsible for risk assessment shall assess the risk controllability of the draft decision.	The Bank requires that the borrower should conduct an E&S assessment according to ESS1 to evaluate, identify and minimize E&S risks and impacts at all stages.	Partly consistent Main gap: Social stability risk assessment has a narrow scope, and it is a tool to reduce social conflicts and public protests. Remedy: E&S impacts should be considered in the Central Basin Component and its downstream impacts. As part of the legal documents, the CPMO should prepare an ESCP to promise that it will study downstream E&S impacts of TA activities according to the ESMF and ESS1 and propose management tools proportionate to E&S risks (including an E&S chapter, SESA and CIA).
2	Social Stability Risk Assessment for Major Fixed Asset Investment Projects	2012	China requires that a social stability risk assessment be conducted around the legitimacy, rationality, feasibility and controllability of a project, and major decisions and surveys should cover all local stakeholders, and fully collect their opinions, including rational and irrational, realistic and potential needs. On the basis of a risk survey, risk factors potentially leading to social stability risks shall be analyzed in cases of stakeholder objection to propose mitigation measures.		
III. Laws on labor management					
3	Labor Law of the PRC	Amended in 2018	This Law applies to enterprises, individually-owned economic organizations (hereinafter referred to as the employer) and laborers who form a labor relationship with them within the boundary of the Peoples Republic of China. State departments, institutional organizations and social groups and laborers who form a labor relationship with them shall follow this Law.	The scope of application of ESS2 depends on the type of employment between the borrower and project workers, including direct workers, contracted workers, primary supply workers, and community workers.	Main gap: China's labor policies do not conduct classification according to ESS2, and do not require the preparation of an LMP. Remedy: Labor is into four types according to the Bank standard, and management measures are developed based on ESS2 (e.g.,

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			Forced labor shall be prohibited. Anyone who uses laborer by force, threat or illegal restriction of personal freedom shall be prosecuted criminally.	The borrower should develop and implement a written LMP applicable to the Central Basin Component. ESS2 prohibits forced labor.	safety education and awareness training) on the basis of an analysis of labor risks (health and safety). For downstream labor risks, the suggestions on how to manage relevant risks will be consistent with ESS2 and take into account the essential elements of LMP in a way appropriate to relevant TA activities.
4	Labor Law of the PRC Labor Contract Law of the PRC	Amended in 2018 Amended in 2012	A labor contract should be entered into to define both parties' rights and obligations. When an employer hires an employee, it shall faithfully inform him of the work contents, conditions and location, occupational harm, work safety state, remuneration, and other information which the employee requires to be informed. Where an employer formulates, amends or decides rules or important events which are directly related to the interests of the employees, such rules or important events shall be discussed at the meeting of employees' representatives or the general meeting of all employees, and the employer shall negotiate with the labor union or the employees' representatives on a equal basis.	ESS2 requires that the borrower should provide a document that specifies the employment terms and conditions to project workers, and pay them according to the state laws and LMP. As required by the state laws or LMP, project workers should receive a termination slip and a severance pay list in a timely manner.	Consistent
5	Regulations on Labor Security Supervision	Amended in 2018	China has a sound labor dispute mediation system through a corporate committee under the formal trade union system. Workers may also appeal through the labor bureau directly. The labor security supervision over enterprises and individual industrial and commercial households (hereinafter referred to as the employing entities) shall be governed by these Regulations. The labor security supervision over job intermediary institutions, occupational skills training institutions, and occupational skills assessment and	ESS2 requires that a GRM must be established for all direct and contracted workers to file grievances about the workplace.	Consistent

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			authentication institutions shall be conducted in accordance with these Regulations. The labor security supervision over an employing entity shall be under the jurisdiction of the labor security administration at the county level or at the level of a city divided into districts at the locality of employment by the employing entity. Labor security supervision shall be conducted in such forms as routine inspection, written review, special inspection, and complaint investigation.		
6	Trade Union Law of the PRC	Amended for a second time in 2009	All physical and mental workers of enterprises and public institutions shall have the right to join and organize trade unions, regardless of ethnic group, race, gender, occupation, religion and education. An enterprise or public institution shall establish a trade union according to law within one year after opening. The trade union shall urge enterprises and public institutions to cover endowment, unemployment, medical, injury, maternity and other social insurance for workers according to law. The trade union shall assist enterprises and public institutions in collective welfare, salary payment, social insurance, labor safety and health, etc.	ESS2 specifies that if the laws of the borrower allow workers to organize and bargain freely, such laws will apply. In this case, a worker organization will be established according to law, and information required for effective negotiation provided in a timely manner.	Consistent
7	Law of the PRC on the Protection of Rights and Interests of Women Special Provisions on Labor Protection of Female Employees	Amended in 2018 2017	Special protection shall be offered to women and children, and they shall not be hired for dangerous jobs. Women shall enjoy the same labor and social security rights as men, and receive equal pay for equal work. The employer shall protect women's safety and health at work, and not assign unsuitable jobs to women. Women enjoy special protection during menstruation, pregnancy, lying-in and breastfeeding periods.	ESS2 proposes appropriate protection and assistance measures to address the vulnerability of certain worker groups, including women, the disabled, migrant workers and child labor.	Consistent

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			The employer shall prevent sexual harassment on female workers, and protect their privacy when handling their appeals. In Zhejiang Province, the human resources and social security, work safety management, health, and family planning departments of governments at or above the county level should protect and manage female workers' labor protection properly.		
III. Policies on information disclosure and public participation					
8	Opinions of the General Office of the State Council on Advancing Public Disclosure of Government Information in the Field of Approval and Implementation of Major Construction Projects	2017	Except national secrets, trade secrets, personal privacy, and other content which is not disclosed according to the law, the information in the process of the approval and implementation of major construction projects shall be disclosed to the public as much as possible so as to improve the transparency and efficiency of the approval and implementation of projects. Over the course of the approval and implementation of major construction projects, information of eight kinds, including approval service information, approval result information, invitation for bid and bidding information, land expropriation information, information on material modification of design, construction-related information, quality safety supervision information, and information relating to completion of construction, shall be publicly disclosed in priority. Government affairs shall be disclosed comprehensively, and public participation, expert demonstration, risk assessment, legitimacy review, and collective decision-making conducted. Promote government data opening, strengthen policy interpretation and expand public participation. Government affairs disclosure shall be included in the performance evaluation system, and third party agencies encouraged to evaluate	ESS10 requires the borrower to disclose project information to stakeholders. Before the project assessment by the Bank, stakeholders should be informed of the project risks, participation process, appeal procedure, etc. ESS10 requires that all stakeholders be consulted meaningfully, timely, relevant, understandable and accessible information provided to the stakeholders, and they are not manipulated or threatened. The SEP will be developed and implemented at the project level to describe the times and methods of contact with stakeholders in the whole project lifecycle.	Partly consistent Main gap: China's policies do not require the development and implementation of an SEP that describes the times and methods of contact with stakeholders in the whole project lifecycle. Remedy: A stand-alone SEF has been prepared for the Central Basin Component as per ESS10. During the implementation of the TA activities, the TA work plan will include solid arrangement for enforcing stakeholder engagement, consistent with SEF and ESS10, and conduct information disclosure and meaningful stakeholder engagement. Relevant suggestions and opinions will be included in outputs of TA.

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			disclosure quality and effectiveness independently and fairly.		
9	Opinions of the General Office of the State Council on Advancing Public Disclosure of Government Information in the Public Resource Allocation Field	2016	The basic information, transaction process information, bidding information, contract execution and performance, etc. of a public resource project shall be disclosed by the administrative department or public institution managing or allocating public resources respectively; the administrative departments concerned should disclose law violation and discredit information along.	ESS10 requires the borrower to disclose project information to stakeholders. Before the project assessment by the Bank, stakeholders should be informed of the project risks, participation process, appeal procedure, etc.	Consistent
10	Regulations on Complaint Letters and Visits	2005	Transparent grievance redress channels have been established, and implementation measures for further appeals are in place. Citizens, legal persons or other organizations shall submit suggestions, opinions or appeal requests to governments at all levels by way of letter, e-mail, telephone or visit, etc., to be handled by competent administrative authorities according to law. The department for letters and visits of the people's government at or above the county level shall, upon receiving a letter or visit, register the letter-or-visit matter presented and handle it on the merits of each case within 15 days. The matter presented by a letter-writer or visitor shall be handled within 60 days from the date it is accepted. If the matter is complicated, the time limit for handling it may be extended appropriately upon the approval by the responsible person of the administrative organ concerned, but the period extended shall not exceed 30 days, and the letter-writer or visitor shall be notified of the reasons for such extension.	ESS10 requires that a GRM be implemented to accept and promote grievance redress for all project-affected parties, and that stakeholder engagement records be kept, including a description of stakeholders, a summary of feedback received, and a brief description of how to consider feedback, or reason for not considering feedback.	Consistent
IV. Laws on LA, HD and involuntary resettlement					

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
10	Land Administration Law of the PRC	Amended for the third time in 2019	If land collectively owned by farmers is to be acquired for public interests in any of the following cases, acquisition may be implemented according to law. If a people's government at or above the county level is to apply for land acquisition, it shall conduct a current status survey and a social stability risk assessment, and disclose the range and purpose of acquisition, current status, compensation rate, resettlement mode, social security, etc. in the township (town), village and village group to collect comments from the affected rural collective economic organization and its members, village committee and other stakeholders. If most members of the affected rural collective economic organization think that the land compensation and resettlement program does not conform to the laws and regulations, the people's government at or above the county level shall organize a public hearing, and modify the program according to the laws, regulations and public hearing. Owners or users of the land to be acquired shall, within the time limit specified in the announcement, go through compensation registration on the strength of the real estate ownership certificate. The people's government at or above the county level shall organize the department concerned to estimate the relevant costs and make them fully available, enter into compensation and resettlement agreements with the owners and users of the land to be acquired. The people's government at or above the county level shall apply for land acquisition only when the preparatory work has been completed. Fair and reasonable compensation shall be granted for land acquisition to ensure that the living	The objectives of ESS5 are: 1) To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives; 2) To avoid forced eviction; 3) To provide timely compensation for loss of assets at replacement cost, or assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher; 4) To improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure; 5) To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; 6) To ensure that resettlement activities are planned and implemented with appropriate disclosure of information,	Largely consistent The main gaps are: 1) There is no special requirement for RAP preparation except for major hydropower projects; 2) There is no social audit requirement for land acquired in the past and to be used for the project; 3) There is no monitoring and evaluation requirement (including third party monitoring of displaced persons' living standard) except for major water resources projects. Remedies: If any study's downstream social impacts are related to land acquisition, restrictions on land use and resettlement, the TA outputs shall formulate apprproate suggestions and principles (aligning with ESS5) on planning, implementation, participation, resettlement, monitoring and evaluation, among others .

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			standard of the affected farmers is not reduced, and their long-term livelihoods are secured.	meaningful consultation, and the informed participation of those affected.	
11	Regulations on the Expropriation of Buildings on State-owned Land and Compensation	2011	Where a building of any entity or individual on state-owned land is expropriated for public interest, the owner of the expropriated building (hereinafter referred to as the "owner") shall be fairly compensated. The principle of democratic decision-making, due process and open results shall be followed in the building expropriation and compensation. The compensation for the value of houses to be expropriated shall not be less than the market price of the real estate comparable to the houses to be expropriated on the date of the public notice of the house expropriation decisions. The value of the houses to be expropriated shall be assessed and determined by real estate appraisal agencies with appropriate qualifications in accordance with the procedures for evaluating houses to be expropriated.		
V. Ethnic minority policies					
12	Law of the PRC on Regional National Autonomy	1984	Local governments of ethnic minority autonomy must consult local minority representatives extensively and respect their opinions when handling special issues related to local minority residents. Local governments at all levels shall protect local minority residents' statutory civil rights, and educate them to perform the obligations stipulated in the Constitution.	ESS7 requires that local minority communities are fully consulted about, and have opportunities to participate in project design and the determination of project implementation arrangements. The scope and scale of consultation, and subsequent project planning and documentation processes will be proportionate to the scope and scale of potential project risks and impacts. Prepare an EMDP or ethnic minority management framework.	Largely consistent Main gap: Although the Chinese policies stress that affected minority residents receive economic and social benefits suited to their cultural customs through a series of measures, and measures be taken to avoid or minimize potential negative impacts on minority residents, they do not require that minority residents be fully consulted, and that an EMDP or ethnic minority management
13	Regulations of the PRC on Administrative Work of Minority Townships	1993	Local governments of ethnic minority autonomy shall use local languages when performing duties, implement preferential policies in teaching staff, funding and teaching facilities, support education development and the construction of cultural facilities in minority townships, protect minority cultural heritage, and strengthen the training and		

No.	Law / regulation	Version	Applicability	ESS requirements	Consistency evaluation and remedy
			appointment of minority leaders, and introduce talents for local construction.		framework be prepared for investment projects. Remedy: Based on the nature of the Central Basin Component, the arrangement for stakeholder engagement with relevant TA activites should ensure that minority residents are consulted meaningfully, and include willingness, needs and characteristics into TA output and propose tactical suggestions on downstream activities to ensure ethnic minorities could benefit from the development equally.

4 E&S Risk Screening and Management

4.1 E&S Benefits

The Central Basin Component is a series of scientific and policy research and institutional capacity strengthening activities aiming to strengthen the ecological environment protection and rehabilitation of the Yangtze River Basin. Its implementation will have strategic significance at macro level throughout the Yangtze River Basin and can generate positive environment and social benefits.

The Central Basin Component focuses on the integrity of the rivers and ecosystems in the Yangtze River Basin and their systematic management. On the basis of the investigation of key pollutants in the basin and the study of their migration and transformation mechanisms, The Central Basin Component will research, in an integrated way, ecological elements such as mountains, waters, forests, farmlands, lakes and grassland, and will make recommendations to strengthen the relevance and synergy of various measures. It will put forward technical and institutional suggestions for the systemic protection and rehabilitation of the ecological environment. The extension of the TA results will greatly promote the overall improvement of the quality of ecosystem functions in the Yangtze River Basin.

At the same time, the Central Basin Component intends to explore aquatic ecological product value accounting methods, make suggestions to improve the ecological environment compensation mechanism in the river basin, and help inform green economic development.

The Yangtze River is the mother river of the Chinese nation. The contribution of the Central Basin Component to the ecological protection and rehabilitation of the Yangtze River Basin will be transformed into positive E&S benefits, benefiting more than 400 million people in the Yangtze River Basin, and contributing to China's green and sustainable development, as well as global public goods.

4.2 E&S Risks/Impacts Screening

Based on the project design with an overall "substantial" E&S risk rating, the design of The Central Basin Component is based on the following principles:

- The activities under the Central Basin Component are limited to TA activities, and do not involve civil works;
- The activities will not introduce alien species, neither will the component involve primary production and harvesting of living natural resources, or purchase/use natural resource commodities;
- Any activity with potential high E&S risks is not supported, such as direct feasibility study or design for any downstream infrastructure or investment activities;
- Any activity that assists the Chinese government in drafting any policy or plan for the protection of the Yangtze River Basin is not supported, and only any activity that provides basic advice on any relevant policy or plan is supported;
- Implementation of TA outputs will not bring any negative impacts on critical habitats or natural habitats, and will avoid, minimize, or reduce impacts to modified habitats and biodiversity;
- Implementation of TA outputs will avoid adverse impacts on any known cultural

heritage, and will have chance find procedures for unknown heritage.

In general, the Central Basin Component consists of TA activities which mainly include scientific and policy research in several key areas such as water environment pollution investigation and traceability research, water ecosystem correlation research, system protection and rehabilitation research, solid waste recycling and utilization technology research, and ecological product value research, as well as capacity building and international exchange training activities. The TA activities themselves do not involve any civil engineering and other physical works, so there is no direct E&S risks and impacts. However, the results of certain TA activities will provide protection and rehabilitation technology or policy suggestions, and if these suggestions are adopted and implemented, they may bring potential indirect downstream E&S impacts.

Following the guidance of the Bank's Advisory Notes for ESF which classify TA activities into three types and nature of TA activities, Table 4-1 provides a qualitative summary of E&S risks and impacts and sets out potentially applicable ESSs and management tools.

- **Type I**: Activities that assist the preparation of future investments in infrastructure or other sectors. This assistance may include support to the preparation of feasibility studies, detailed technical designs, safeguard instruments, bid documents, etc. in preparation for the future construction of physical infrastructure or for the implementation of other activities with potentially significant physical impacts. **The Central Basin Component does not involve Type I activities.**
- **Type II**: Activities that often support the drafting of policies, programs, plans, strategies, laws and/or regulations that can be expected to have direct or indirect E&S impacts when implemented.
- **Type III**: Capacity building activities, which have minimum or no E&S risks. The main E&S risks are likely related to labor management of CPMO staff, researchers and management of from consulting companies. In consideration of the nature and characteristics of the activities, the labor risks are "low".

Based on the above classification system, it is noted that the TA activities under the Central Basin Component do not include **Type I** activities, i.e. the project does not support preparation of downstream investment activities. Meanwhile, it is also worth noting that these TA activities are not directly drafting polices, plans or regulations, but only provide research suggestions on these topics.

For the 30 TA activities identified to date and proposed to be included under the Central Basin Component, Table 4-1 identifies their E&S risks, and proposed management measures one by one.

Table 4-1 Identification of E&S Risks

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
Water pollution screening and source tracing	Traceability analysis of the key pollutant (phosphorus) in the Yangtze River	II	This topic is a scientific research activity with no direct adverse environmental impact and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS6 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on phosphorus migration and transformation in the Yangtze River, and influencing factors	II	This topic is a scientific research activity with no direct adverse environmental impact and will not lead to direct downstream works. It will provide basic data for future policy making and planning only and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
						ESS1, ESS2, ESS3, ESS6 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on a technical system for the prevention and control of total phosphorus in the Yangtze River	II	This topic has no direct adverse environmental impact. However, its research suggestions, if implemented, may lead to indirect environmental impacts, such as industrial upgrading or restructuring policies, and changes in agricultural policies, which would have indirect downstream environmental implications. For example, policy suggesyions may promote alternative technoliges or upgrading of extsitng indutrsial enterprises, which may imply environmental risks (e.g. related to operation of industrial enterprises) other than the benefits of phosphorus reduction. The overall environmental risk rating is substantial.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This study may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land use, the closedown / relocation / reconstruction of industrial enterprises, and resettlement. The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts, resettlement risks and management, information disclosure and stakeholder engagement strategies, etc.
	Traceability analysis and emergency prevention and	II	This topic has no direct adverse environmental impact. However, its research suggestions, if	The main social risk of this topic is inadequate stakeholder engagement (including	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	control system of total phosphorus in the Yangtze River under extreme weather		implemented, may lead to indirect environmental impacts, such as industrial restructuring policies, and changes in agricultural policies, which would have indirect downstream environmental implications. For example, the TA suggestions may promote agricultural practice changes or industrial restructuring which bring environmental risks (e.g. water resources consumption or pesticide use changes) other than benfits of phosphorus reduction. The overall environmental risk rating is substantial.	government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This study may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land use, the closedown / relocation / reconstruction of industrial enterprises, and resettlement. The overall social risk rating is substantial.		part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts, resettlement risks and management, information disclosure and stakeholder engagement strategies, etc.
Water ecosystem correlation research	Analysis of regional features and correlation of Yangtze River water ecosystems	II	This topic is a scientific research activity with no direct adverse environmental impact, and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic has no significant downstream social risk.	moderate	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan) and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
				The overall social risk rating is moderate taking into account of labor risks.		consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impact, information disclosure and stakeholder engagement strategies, etc.
	Study on the relevance and stress effect of ecological elements	II	This topic is a scientific research activity with no direct adverse environmental impact, and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic has no significant downstream social risk. The overall social risk rating is moderate taking into account of labor risks.	moderate	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan) and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including biodiversity impacts, information disclosure and stakeholder engagement strategies, etc.

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	Study on water ecosystem restoration technology	II	This topic has no direct adverse environmental impact. However, its research suggestions, if implemented, may lead to low to moderate indirect environmental impacts. The overall environmental risk rating is moderate.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic may lead to downstream social impacts, and involve small works, which may lead to resettlement, and worker and community health and safety risks, minority impacts, etc. The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan) and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impact assessment, alternative analysis, resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Policy suggestions for integrated mountain, river, forest, farmland,	II	This topic has no direct adverse environmental impact. As the research is intended to promote integrated protection of various ecosystems, the implication of	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs,	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	lake and grassland protection		policy suggestions is unlikely to bring major environmental risks. The overall environmental risk rating is low.	farmers, breeders, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land and water use, livelihood change, and non-inclusiveness risks (vulnerable groups, ethnic minorities, etc.) The overall social risk rating is substantial.		to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impact, resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
Protection and rehabilitation of key lake and tributary systems	Investigation and analysis of water ecological environment of Poyang and Dongting Lakes	II	This topic is a scientific research activity with no direct adverse environmental impact, and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, river / lake chiefs, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic has no significant downstream social risk.	moderate	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
				The overall social risk rating is moderate taking into account of labor risks.		incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on the health assessment of the ecosystems of Poyang and Dongting Lakes	II	This topic has no direct adverse environmental impact, and will not lead to any direct downstream engineering activity. The research outputs provide basic information for future policies and plans only, with no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including alternative analysis, information disclosure and stakeholder engagement strategies, etc.
	Case study on the protection and	II	This topic has no direct adverse environmental impact. As the	The main social risk of this topic is inadequate stakeholder	Substantial	**TA activities**: Develop the arrangement/plan for

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	rehabilitation technology and institutional arrangements for the ecosystems of Poyang and Dongting Lakes		research is intended to provide suggestions on environmental protection technology and institutional arrangements, which is unlikely to bring major indirect environmental risks. The overall environmental risk rating is low.	engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land and water use, livelihood change, and non-inclusiveness risks (vulnerable groups, ethnic minorities, etc.) The overall social risk rating is substantial.		stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts assessment (cumulative impacts and alternative analysis), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on water ecological protection and rehabilitation in key regions of Poyang and Dongting Lakes	II	This topic has no direct adverse environmental impact. As the research is intended to provide suggestions on ecological protection and rehabilitation of the two lakes, the adoption and	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders,	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
			implementation of such suggestions is unlikely to cause major environmental risks to the environment. The overall environmental risk rating is low.	research institutes, etc.); fieldwork may be conducted during this study, involving investigator health and safety risks. This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land and water use, livelihood change, and non-inclusiveness risks (vulnerable groups, ethnic minorities, etc.) The overall social risk rating is substantial.		traffic safety and health training, and awareness education to research staff. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts assessment (cumulative impacts and alternative analysis), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Investigation and evaluation of water ecological environment of the Jialing and Wujiang Rivers	II	This topic is a scientific research activity with no direct adverse environmental impact, and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); fieldwork may be conducted during this study, involving	moderate	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff.

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
				investigator health and safety risks. This topic has no significant downstream social risk. The overall social risk rating is moderate taking into account of labor risks.		**Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on protection and rehabilitation system of the Jialing and Wujiang River Basins	II	This topic is a scientific research activity with no direct adverse environmental impact, and will not lead to direct downstream works. It will provide basic data for future policy making and planning only, and has no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	Study on protection strategy for the Jialing and Wujiang River water ecosystems	II	This topic has no direct adverse environmental impact. As the research is intended to provide suggestions on ecosystem protection, the adoption and implementation of such suggestions will enhance environmental protection and are unlikely to cause major environmental risks.. The overall environmental risk rating low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land and water use, livelihood change, and non-inclusiveness risks (vulnerable groups, ethnic minorities, etc.) The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10 The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts assessment (cumulative impacts and alternative analysis), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on ecological protection and rehabilitation strategies of typical river segments	II	This topic has no direct adverse environmental impact. As the research is intended to provide suggestions on ecosystem protection and rehabilitation, the adoption and implementation of such suggestions will enhance	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.);	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it.

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
			environmental protection and unlikely cause major environmental risks. The overall environmental risk rating low	This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to restriction on land and water use, livelihood change, and non-inclusiveness risks (vulnerable groups, ethnic minorities, etc.) The overall social risk rating is substantial.		**Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts assessment (cumulative impacts and alternative analysis), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
Research on integrated solid waste utilization	Study on phosphorus slag treatment and comprehensive utilization technology	II	This topic has no direct adverse environmental impact, but its solid waste disposal suggestions may lead to policy changes with indirect impacts if implemented subsequently, the degree of which depends on policy suggestions. For example, the suggestions may promote new treatment technologis and establishment of new treatment enterprises which will bring indirect risks related to operation of such enterprises, such as noise, wastewater, worker	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to the construction / reconstruction of phosphorus slag disposal facilities, resulting	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10.

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
			safety and health, community safety issues etc. The overall environmental risk rating is substantial.	in resettlement, labor safety, and community health and safety risks; The overall social risk rating is substantial.		The TA outputs include a chapter on downstream E&S risk management suggestions, including ESS3 related considerations (alternative technologies, GIIP, EHSGs), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on key technologies of manganese mines ecological rehabilitation	II	This topic has no direct adverse environmental impact, but its solid waste disposal suggestions may lead to policy changes with indirect impacts if implemented subsequently, the degree of which depends on policy suggestions. For example, the suggestions may promote adoption of new technologies which may have other potential environmental risks while being used for mine site rehabilitation. The overall environmental risk rating is substantial.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, research institutes, etc.); This topic may lead to downstream social risks, Relevant policy suggestions once implemented may lead to the construction / reconstruction of phosphorus slag disposal facilities, resulting in resettlement, labor safety, and community health and safety risks; The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including ESS3 related considerations (alternative technologies, GIIP, EHSGs), resettlement risks and management,

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
						ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on integrated technology of organic solid waste utilization	II	This topic has no direct adverse environmental impact, but its solid waste disposal suggestions may lead to policy changes with indirect impacts if implemented subsequently, the degree of which depends on policy suggestions. For example, the suggestions may promote adoption of technologies and establishment of new enterprises, which will bring indirect environmental risks related to the operation of such enterprises such as noise, wastewater, solid waste, worker safety and health, community safety issues etc. The overall environmental risk rating is substantial.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to the construction / reconstruction of solid waste disposal facilities, resulting in resettlement, NIMBY, labor safety, ethnic minorities and community health and safety risks; The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including ESS3 related considerations (alternative technologies, GIIP, EHSGs), resettlement risks and management, information disclosure and stakeholder engagement strategies, etc.
	Study on technology of inorganic solid waste utilization	II	This topic has no direct adverse environmental impact, but its solid waste disposal suggestions may lead to policy changes with indirect impacts if implemented	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
			subsequently, the degree of which depends on policy suggestions. For example, the suggestions may promote adoption of technologies and establishment of new enterprises, which will bring indirect environmental risks related to the operation of such enterprises, such as noise, wastewater, worker safety and health, community safety issues etc. The overall environmental risk rating is substantial.	chiefs, farmers, research institutes, etc.) This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to the construction / reconstruction of solid waste disposal facilities, resulting in resettlement, NIMBY, labor safety, and community health and safety risks; The overall social risk rating is substantial.		provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including ESS3 related considerations (alternative technologies, GIIP, EHSGs), resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
Research on value realization mechanisms of ecological products	Ecological product investigation and status identification	II	Training and exchange activities have no direct adverse environmental impact, and its outcomes have no significant indirect adverse environmental impact. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
						consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on ecological product investigation and monitoring mechanism	II	This topic has no direct adverse environmental impact, and its outputs may include suggestions on the ecological product monitoring mechanism, which, if implemented, may lead to minor indirect adverse environmental impacts. The overall environmental risk rating is low.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on the valuation mechanism of ecological products	II	Training and exchange activities have no direct adverse environmental impact, and its outputs have no significant indirect adverse environmental	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake	Low	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
			impact. The overall environmental risk rating is low.	chiefs, farmers, breeders, research institutes, etc.); This topic has no significant downstream social risk; The overall social risk rating is low.		provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS6, and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including information disclosure and stakeholder engagement strategies, etc.
	Study on the operation and development mechanism of ecological products	II	This topic has no direct adverse environmental impact. However, its research suggestions, if implemented, may lead to policy changes with indirect adverse environmental impacts, such as potentially substantial environmental risk in the operation and development of aquatic products. The overall environmental risk rating is substantial.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to changes in the production pattern of aquatic products and the livelihood of related parties, and non-inclusiveness risks, thereby affecting minority residents;	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
				The overall social risk rating is substantial.		strategic E&S impacts, resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on protection and compensation mechanism of ecological products	II	This topic has no direct adverse environmental impact. However, its research suggestions, if implemented, may lead to policy changes with indirect environmental impacts, the degree of which may be substantial as the case may be, e.g. the policy may promote establishment of enterprises for production of eco-products using living natural resoures, or aquatic farms. The potential impacts may be related to the operation of such enterprises, such as waste water generation, consumption of living natural resources, water pollution from use of chemicals for aquatic life disease control etc., The overall environmental risk rating is substantial.	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to changes in the production pattern of aquatic products and the livelihood of related parties, and non-inclusiveness risks, thereby affecting minority residents; The overall social risk rating is substantial.	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts, resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
	Study on the key issues of the value realization mechanism of	II	This topic has no direct adverse environmental impact. However, its research suggestions, if implemented, may lead to policy	The main social risk of this topic is inadequate stakeholder engagement (including government agencies, industry	Substantial	**TA activities**: Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	aquatic ecological products		changes with indirect environmental impacts, the degree of which may be substantial as the case may be, e.g. the new mechanism may promote establishment of enterprises for aquatic products which may have potential impacts of water pollution risks due to food feeding and disease control, worker safety and health etc.. The overall environmental risk rating is substantial.	parks, enterprises, river / lake chiefs, farmers, breeders, research institutes, etc.); This topic may lead to downstream social risks. Relevant policy suggestions once implemented may lead to changes in the production pattern of aquatic products and the livelihood of related parties, and resettlement and non-inclusiveness risks, thereby affecting minority residents; The overall social risk rating is substantial.		provide adequate resources to implement it. **Downstream E&S impacts**: E&S considerations is incorporated into the TORs, with appropriate consideration of ESSs, mainly ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10. The TA outputs include a chapter on downstream E&S risk management suggestions, including strategic E&S impacts, resettlement risks and management, ethnic minority development, information disclosure and stakeholder engagement strategies, etc.
Capacity building, and international exchanges and training	Promoting the enforcement of river and lake chiefs in the Yangtze River Basin	III	Training and exchange activities have no direct or indirect adverse environmental impact. The overall environmental risk rating is low.	The technical, research and management staff of the CPMO and TA implementation agency may be exposed to health and safety risks. Inadequate stakeholder engagement. The overall social risk rating is low.	Low	Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff.
	International exchanges and training on coordination and management system	III	Training and exchange activities have no direct or indirect adverse environmental impact. The overall environmental risk rating is low.	The technical, research and management staff of the CPMO and TA implementation agency may be exposed to health and safety risks.	Low	Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources

Sub-component	Research topic	TA Type	Potential environmental risks/impacts	Potential social risks/impacts	Overall risk rating	ESSs and instruments
	for river and lake protection and governance			The overall social risk rating is low.		to implement it, and offer traffic safety and health training, and awareness education to research staff.
	Discussions and exchanges on collaborative governance of rivers and lakes, and promotion of green development systems policies	III	Training and exchange activities have no direct or indirect adverse environmental impact. The overall environmental risk rating is low.	Inadequate stakeholder engagement. The overall social risk rating is low.	Low	Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff.
	Study on YREB Resource and environmental supervision and management information sharing mechanism	III	Training and exchange activities, and development of information sharing mechanisms, have no direct or indirect adverse environmental impact. The overall environmental risk rating is low.	Inadequate stakeholder engagement; The overall social risk rating is low.	Low	Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff.
	Extension and publicity of project outcomes	III	Training and exchange activities have no direct or indirect adverse environmental impact. The overall environmental risk rating is low.	Inadequate stakeholder engagement, including minority residents, where cultural adaptation (language and customs) in minority areas should be considered. The overall social risk rating is low.	Low	Develop the arrangement/plan for stakeholder engagement (as part of TA work plan)_ and provide adequate resources to implement it, and offer traffic safety and health training, and awareness education to research staff.

4.3 E&S Impact Analysis

According to the screening in Table 4-1, the TA activities under the Central Basin Component fall into two types:

1) Type II activities:

These activities are scientific and policy studies on water pollution source control, water ecosystem rehabilitation, solid waste recycling and utilization, value realization of ecological products etc. The study outputs will provide technical and policy suggestions on pollution control, ecological system protection and rehabilitation. The overall objectives these studies are to protect and improve environment, reduce and control pollution emission and restore ecosystem function of Yangtze River. Since these studies do not involve physical works, their overall E&S risks are low. However, based on the Bank ESSs, the E&S risks of the TA activities mainly include: 1) inadequate stakeholder engagement; and 2) labor risks of the management and research staff in the TA activities, such as health and safety risks in fieldwork (COVID-19), and lack of full travel subsidies. In general, the overall labor risk rating of the TA activities is moderate. The CPMO will identify worker safety impacts and propose management requirements accordingly in the TORs, and ask the relevant staff to attend E&S training organized by it (including health and safety).

However, there are potential indirect E&S risks implications from the outputs of these studies. Among them, some studies are scientific research activities, e.g. study on spatial and temporal distribution of key pollutants, migration and transformation mechanism of phosphorus, study of regional characteristics of Yangtze ecosystems, investigation of ecological environment etc. These scientific studies provide academic foundations for next step technology and policy studies, therefore, don't have obvious indirect environmental impacts. The environmental risk of these activities is moderate. Some other studies focus on suggestions on technologies and policies on pollution control, water ecological rehabilitation, solid waste utilization, eco-compensation mechanism etc. The suggestions of these studies, if adopted and implemented, may cause potential downstream activities that lead to indirect environmental impacts. Such indirect environmental impacts may present various level of environmental risks ranging from low to medium, even to substantial level. For instance, the TA output suggestions may lead to downstream activities such as pollution treatment facilities, ecological system rehabilitation works or river/lake connection works, which will cause adverse environmental impacts during construction and operation stages; ecological protection policies may lead to social impacts such as land use change, access restriction or restriction of resource use; promotion of solid waste utilization technologies may lead to establishment of new industrial enterprises; suggestions of basin studies may also have implications on aquatic life, water use and right, water resource allocation, and even broader implications of hydrology, climate change, urbanization and industrialization.

Since the essential purpose of the Central Basin Component activities is to protect the ecological environment of the Yangtze River Basin, promote social development, and benefit the people of the river basin, it is unlikely for the project outcome suggestions to lead to "high risk" activities that have significant negative impacts on the environment and society.

2) Type III activities:

These activities are basically personnel and institutional capacity strengthening activities, including international exchange and training, seminars, publications and outreach activities. There are no obvious direct and indirect E&S risks. While, certain risks warrant careful considerations, e.g. full participation of stakeholders, and COVID-19 risks for training and seminar activities etc. In terms of COVID-19 prevention and control, China has established a comprehensive prevention and control system, including a series of policies/regulations and implementation measures, which has been proved to be effective in the prevention and control of COVID-19. In addition, the CPMO will offer E&S training (including health and safety) to the relevant staff. Therefore, the overall E&S risks of Type III activities are "low".

In summary, the overall E&S risk rating of the Central Basin Component is substantial.

4.4 E&S Risk Management

Considering the above E&S risks and impacts, and the Bank ESF requirements, the following principles are considered during the design and implementation of the TA activities under the Central Basin Component:

- Integrate the E&S objectives into the TA process;
- Promote extensive stakeholder engagement and information disclosure as per ESS10, especially at the key stages of planning;
- Promote the application of appropriate E&S assessment tools, for example applying the strategic environmental and social assessment (SESA) to a policy, plan or program (if relevant);
- Promote E&S capacity building and institutional strengthening. Strengthen the E&S capacity of functional departments and other NGOs through TA activities (policies, training, support, technical standard formulation, monitoring and reporting, etc.) as part of the Program design.

Therefore, the following management measures will be implemented for the two different types of TA activities:

1) Type II activities:

Types II activities include technical and policy researches on multiple areas, of which the outputs of these researches are intended to provide technical and policy recommendation on the ecological environmental protection and rehabilitation in Yangtze River basin. Considering the potential indirect E&S risks/impacts of downstream implementation of such suggestions, it is required that the TA researchers shall conduct appropriate downstream E&S impact assessment during the study process as per ESF requirements. The following E&S management measures will be taken:

- Ensure that the TORs for the TA activities include the TA implementation agencies' labor health and safety requirements, the analysis and evaluation of downstream potential E&S risks, and stakeholder engagement and information disclosure requirements, and submit the TORs to the Bank's project team for review;
- Offer health and safety training, and awareness education to TA workers (including management and research staff), screen and identify appropriate E&S management tools according to this ESMF, evaluate potential direct, indirect and cumulative downstream impacts during the implementation of the TA activities, and propose

corresponding measures and suggestions (including measures and suggestions for E&S impacts in subsequent research and policymaking). Relevant E&S management tools include an E&S analysis chapter, cumulative E&S impact assessment (CIA)[11], strategic E&S impact assessment (SESA)[12], etc.

- The TA outputs involving E&S risk management should meet the applicable requirements of the Bank ESSs and submitted to the Bank for review and acceptance.

In addition, stakeholder engagement is to be conducted during the process of TA activities, including participation of seniors, women and poverty groups. To this end, during the preparation and implementation of the Project, it is necessary to further identify stakeholders and their needs according to the SEF, and conduct information disclosure, public participation. For capacity building activities in ethnic minority areas, the cultural appropriateness of ethnic minority areas needs to be considered, and these requirements are incorporated into the SEF.

2) Type III TA activities:

Type III activities are all capacity building activities, with minimal or no environmental risks. While, there are certain social risks in terms of adequate stakeholder participation in exchange and training activities, including seniors, floating population, women and poverty groups. Meanwhile, there are also public health concerns (e.g. COVID-19) for training and seminar types of activities.

Therefore, the CPMO will offer health and safety training, and awareness education to TA workers (including management and research staff) according to this ESMF before carrying out these activities; the CPMO should consider the full and effective participation of stakeholders (including vulnerable groups) in accordance with the SEF when preparing the TORs. During the implementation of the TA activity, information disclosure, public participation and feedback should be conducted in accordance with the arrangement for stakeholder engagement as set out in the TA work plan. Meanwhile, when organizing trainings, seminars and other crowd gathering activities, COVID-19 prevention and control measures shall be carried out in strict accordance with the requirements of formulated by governments at all levels in China.

[11] Cumulative environmental and social impact assessment (CIA) is likely needed in situations where multiple projects occur in or are planned for, the same geographic area or areas with linked by ecological systems. The flags for considering CIA include 1) activities affecting river systems/watersheds; 2) water bodies with multiple inflows; 3) projects producing toxic or noxious air emissions; 4) rapidly developing urban/industrial areas; 5) projects located within home ranges of wide-ranging/migratory species and 6) regional planning/development programs, and the like.

[12] It is a systematic examination of environmental and social risks and impacts and issues associated with a policy, plan or program, typically at the national level but also in smaller areas.

5 E&S Management Procedure

5.1 Overall Requirements

Based on the analysis of potential E&S risks in the previous chapter, the following E&S management procedure has been developed for E&S management during activity screening, preparation and implementation. See Figure 5-1.

The CPMO also committed to providing semi-annual progress reports on E&S performance to the Bank at the implementation stage.

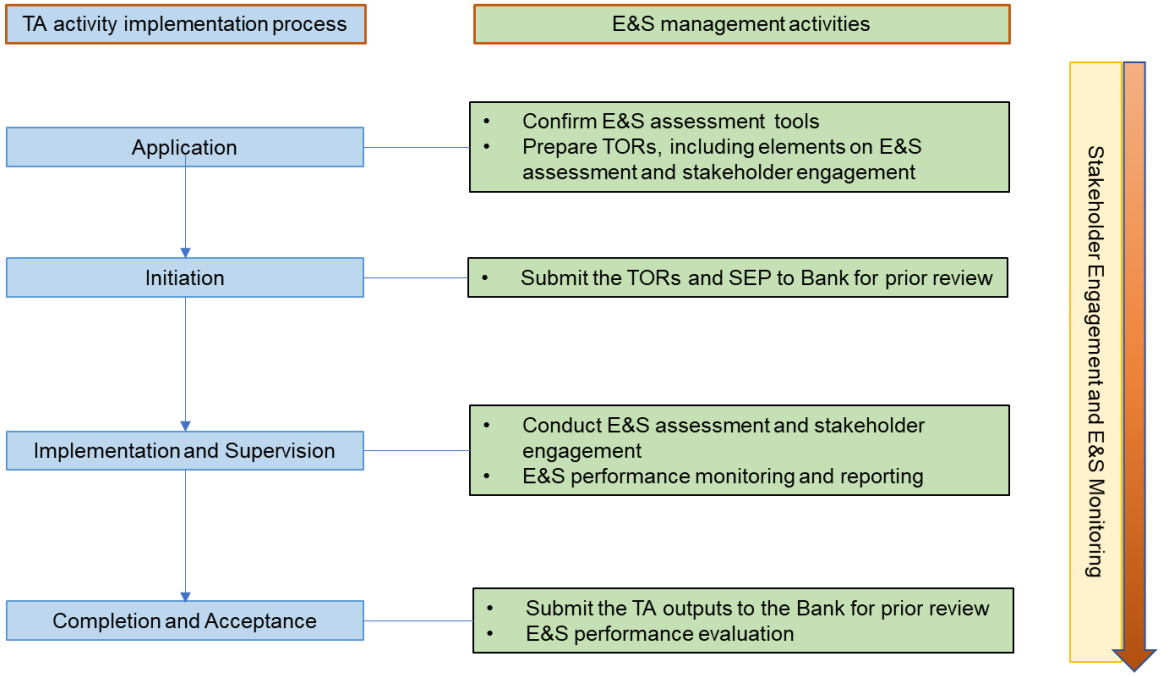

Figure 5-1 E&S Management Procedure

5.2 E&S Management Procedure

In the whole lifecycle of the Central Basin Component, the E&S management procedure is as follows:

1) The CPMO, with the support of E&S consultants, will confirm the types of E&S risks and impacts for specific TA activities, and determine appropriate E&S management documents / tools (such as E&S analysis chapter, CIA, SESA) based on their scope and potential downstream E&S impacts.

2) At the beginning of each Type II activity, the CPMO is responsible for preparing the TORs (see ***Appendix 2*** for the basic requirements), which should be submitted to the Bank for review before tendering to ensure that potential downstream E&S risks / impacts are fully evaluated according to the ESF, and relevant mitigation measures proposed. For any Type II activity involving strategy, plan or decree formulation, an E&S impact analysis chapter should be included in the output report to identify downstream potential E&S risks and propose corresponding measures and suggestions (including suggestions on potential policies and plans of the Chinese government).

3) For each Type III activity, the CPMO shall provide the detailed contents of the activity to the Bank, which will confirm the relevance of the ESSs of the ESF. Once the

applicability of certain ESSs is confirmed, the TORs shall be prepared accordingly, including requirements on stakeholder engagement.

4) All the TORs shall be prior reviewed by the Bank before the tendering process for such activities.

5) The TA implementation agency shall conduct the research according to the TORs, and formulate the TA work plan (including the E&S elements as tentatively set out in Annex 2) that will be reviewed by the Bank. A dedicated chapter of E&S assessment will be included in the output reports, which should screen the potential downstream E&S risks and impacts from the TA suggestions (in case such suggestions may be adopted and implemented), assess such potential E&S impacts, and propose appropriate mitigation measures, including suggestions for the Chinese government on strategic E&S assessment to address the E&S risks and impacts.

6) During implementation, the CPMO is responsible for tracking and monitoring the progress of the TA activity, including the implementation of E&S risk/impact analysis (including labor management performance) at appropriate steps (such as intermediate outcome evaluation).

7) The TA output reports shall be submitted to the Bank before final acceptance in order for the Bank to confirm the compliance with the ESF in terms of potential downstream E&S assessment and mitigation measures suggestions.

8) During implementation, the CPMO shall report the progress of E&S risk and impact assessment work in its periodic reports to the Bank, including the progress and performance of the ESCP implementation.

9) Upon completion of the Central Basin Component, the CPMO should report the summary of E&S impact assessment and suggestions of the TA activities in a dedicated chapter of the Implementation Completion Report.

6 Information Disclosure and Public Participation

A stand-alone SEF has been prepared to guide the CPMO and TA implementation agency to conduct information disclosure and public consultation at the implementation stage. It defines the responsibilities of the CPMO and TA implementation agency at different stages of the Central Basin Component (preparation, research and review), and the corresponding information disclosure and stakeholder engagement strategies, including key points and methods. See the SEF for details.

At the preparation stage, the CPMO conducted preliminary stakeholder engagement and consultation with ministries, commissions and research institutes concerned, mostly on the scope of research, potential E&S risks, preliminary stakeholder identification, and appropriate E&S risk management measures.

The draft E&S documents were prepared during the preparation stage by E&S experts based on the opinions and suggestions from key parties.

The draft E&S documents including ESMF, ESCP and SEF of the Central Basin Component were domestically disclosed to the public and potential affected persons (www.cjw.gov.cn/zwc/gsgg/56781.html) on July 25, 2021 to collect opinions and suggestions for incorporation into the final documents, which will be re-disclosed locally after the Bank clears it, and on the Bank's website before Appraisal.

Figure 6-1 Disclosure of Draft E&S Documents of the Central Basin Component

At the implementation stage, the CPMO and TA implementation agency will maintain all stakeholder engagement, information disclosure and grievance redress records, and report to the Bank through the routine monitoring and reporting mechanism. The CPMO and TA implementation agency will appoint full-time staff and a special budget for information disclosure and stakeholder engagement.

7 Institutional Arrangements and Capacity Building

7.1 Institutional Arrangements and Responsibilities

The institutional arrangements of the Central Basin Component are shown in Figure 7-1.

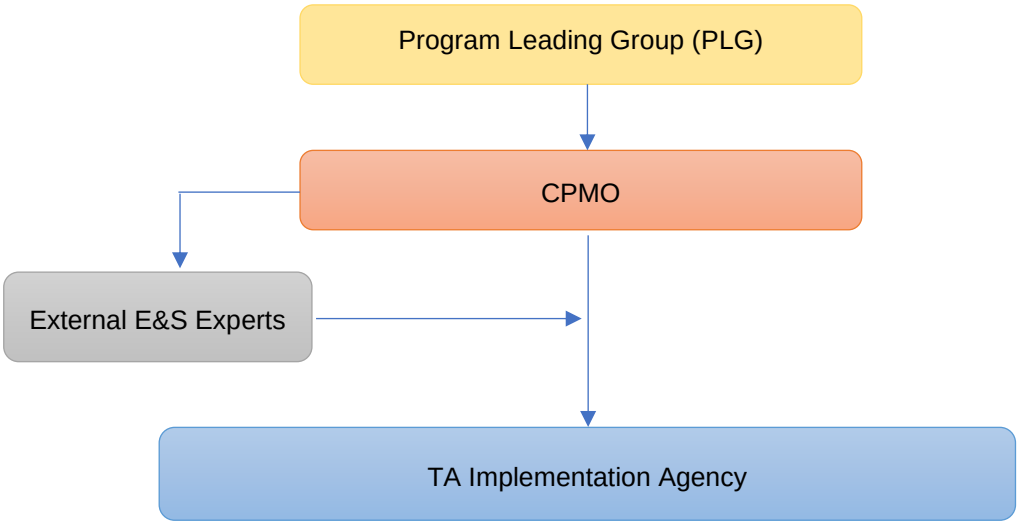

Figure 7-1 Organizational Chart

1) PLG

The Infrastructure Development Department of the National Development and Reform Commission will establish a program leading group (PLG), which is responsible for approving project activities and coordinating relevant departments and localities. The main responsibilities of PLG are: 1) to make decision on project implementation and key affairs (including E&S aspects); 2) to liaise and coordinate relevant departments; 3) to coordinate project selection and preparation; and 4) to guide and supervise project implementation (including E&S aspects).

2) CPMO

NDRC retains responsibility for the implementation of the loan. The CPMO will be hosted by the NDRC YERB Office in the Department of Infrastructure Development and supported by the Changjiang (Yangtze) Water Resources Commission (CWRC)[13]. CWRC is proposed to support implementation as a program implementation agency and be responsible for the daily management of the E&S related elements.

The CPMO will consist of overall management, finance, procurement, and E&S management departments. The CPMO's main responsibilities include: 1) conducting the declaration, procurement and financial management of the Central Basin Component; 2) supervising and reviewing Component implementation; 3) engaging qualified experts to conduct technical consulting; 4) organizing outcome review and inspection, and submitting to the PLG; 5) coordinating with the Bank; and 6) handling other tasks assigned by the PLG.

[13] The administrative arrangement to formalize the organizational set-up for CPMO is to be confirmed before the end of Appraisal.

For E&S management, the CPMO will ensure an environmental specialist and a social specialist are appointed and maintained throughout implementation, with the following responsibilities:

- Implementing the procedures and requirements in this ESMF;
- Including the E&S impact assessment requirements in the TORs;
- Tracking the progress of all studies, reviewing output reports, and ensuring that the E&S impact assessment requirements in the TORs are fully reflected in output reports;
- Reviewing the TORs and output reports of the research topics with substantial risks in coordination with external E&S experts;
- Including the overall E&S management performance of the Central Basin Component in progress reports submitted to the Bank.

3) External E&S Experts

The CPMO will also establish an **Expert Advisory Committee**, which will consist of experienced experts in water resources, ecology, environmental protection, socio-economy, information technology, etc. The committee will provide technical advice on the key issues of TA studies. Within the committee, there will be at least one environmental risk management expert and one social risk management expert, with the following responsibilities:

- Assisting the CPMO in preparing the TORs for substantial risk activities, and incorporating the relevant E&S risks and impact assessment requirements into the TORs in accordance with the ESF;
- Assisting the CPMO in reviewing the substantial TA activities' output reports to ensure that the E&S management requirements in the TORs are fully met; and
- Assisting the CPMO in carrying out E&S management capacity training for the internal staff, TA implementation agencies and other stakeholders.

See Table 7-1 for qualification requirements.

Table 7-1 Key Qualifications for External E&S Experts

Environmental expert	Social expert
1) Solid expertise in EIA and environmental management, and at least 10 years of experience in this field; 2) Familiar with the Bank ESF and China's environmental regulatory policies, and participated in Bank-financed projects in the past 3 years	1) Solid expertise in SIA and social management, and at least 10 years of experience in this field; 2) Familiar with the Bank ESF and China's social regulatory policies, and participated in Bank-financed projects in the past 3 years

4) TA implementation agencies

The TA team of the TA implementation agency should have **at least one environmental expert and one social expert** based on the complexity of E&S impacts. Their main responsibilities are:

- Developing the TA Work Plan (including the time-bound arrangement for enforcing stakeholder engagement), and conducting information disclosure, public participation and stakeholder engagement.

- Conducting an E&S impact assessment on the TA activities according to the TORs, and preparing corresponding E&S documents; and
- Attending E&S management capacity building training.

7.2 E&S Management Capacity Building Plan

NDRC retains responsibility for the implementation of the loan, and it is proposed that they will be supported during impelemtation by CWRC, given its alignment between its mandate and the Program objectives, strong technical capacity and unique research and data capabilities. The CWRC is a special river basin management organization under the Ministry of Water Resources, and is responsible for water administration, law enforcement, integrated water resources management, river basin planning, flood control, drought reaction, river channel management, water and soil conservation, and hydrological research in the Yangtze River Basin and other river basins in southwestern China. The CWRC has many top-level professional experts in the country, including experts in the fields of water resources management, environmental management, and resettlement implementation. In the past few decades, the CWRC has rich experience in World Bank projects and is relatively familiar with the previous safeguards policies. However, there is still a lack of practical project experience under the new ESF.

In order to strengthen the understanding of the Bank ESF, it is particularly important to improve the E&S management capabilities of the CPMO and relevant stakeholders involved in the implementation of the central basin component. Table 7-2 tailors the measures and actions at the CPMO level to raise the awareness and capacity for implementing the ESF for the central basin component.

Table 7-2 Staged Training Program for E&S Management Capacity Building

Target	Scope of training	Objective	Trainer	Person-times	Mode	Time (day)	Frequency
CPMO	○ Bank ESF; ○ This ESMF; ○ State E&S laws and regulations; ○ Potential E&S risks and mitigation measures; ○ Stakeholder engagement	Strengthen the understanding of the ESF by the CPMO which can get familiar with the requirements of this ESMF, and improve project implementation capacity.	Experts with rich Bank project experience, Bank experts	10	Lecture	1	At Component starting, and at least once a year during implementation
Eternal E&S experts	○ Bank ESF and this ESMF; ○ Potential E&S risks and mitigation measures; ○ Stakeholder engagement ○ State E&S laws and regulations.	Strengthen the E&S management knowledge and skills of external experts.	Experts with rich Bank project experience, Bank experts	5	Classroom training workshops (high level)	1	At least once a year during implementation
TA implementation agencies	○ Bank ESF and this ESMF; ○ Potential E&S risks and mitigation measures; ○ Stakeholder engagement	Strengthen the understanding of E&S management measures and requirements.	Experts with rich Bank project experience / CPMO staff	50	Workshop	1	Before implementation, and at least once a year during implementation
Other stakeholders	○ Bank ESF and this ESMF; ○ Potential E&S risks and mitigation measures; ○ Stakeholder engagement	Strengthen the understanding of E&S management measures and requirements.	Experts with rich Bank project experience / CPMO staff	100	Workshop	1	At least once a year during implementation

8 Monitoring and Reporting

8.1 Project Implementation Monitoring

The CPMO is responsible for monitoring the E&S performance at the implementation stage. The dedicated E&S staff with the CPMO shall be responsible for collecting and processing information related to E&S management in a timely manner, regularly tracking the implementation status of components, inspecting E&S performance on site, identifying issues and making suggestions for improvement.

During implementation, the Bank will also supervise the Central Basin Component's E&S performance and give guidance to ensure E&S compliance.

8.2 Reporting

Semi-annual progress reports

To make the NDRC and Bank aware of implementation progress, the CPMO will prepare semiannual progress reports, which include a separate E&S management chapter to report the implementation of the ESMF. See Appendix 3 for the outline of this chapter.

Within one month after six months, the CPMO will submit the semiannual progress report to the Ministry of Finance, NDRC and Bank, and the second semiannual progress report will be the annual progress report.

Completion report

Upon completion of the Central Basin Component, the CPMO will prepare a detailed completion report, which includes a separate E&S management chapter to summarize the implementation of the ESMF in the whole lifecycle, covering organizational structure, measure implementation, performance, arising issues, experience and lessons.

Appendixes

Appendix 1 Evaluation of Labor Management System and Practice

A CPMO will be hosted by the NDRC YERB Office in the Department of Infrastructure Development and supported by the Changjiang (Yangtze) Water Resources Commission (CWRC)[14]. Under the current organization arrangement, CWRC would support implementation as a program implementation agency and be responsible for the daily management of the E&S related elements.

This appendix aims to document the comparative analysis of the CWRC's labor management system (mainly on direct workers) against the requirements of ESS2, report the significant gaps associated with the CWRC's labor risk management. The CWRC has established sound labor management policies and procedures in compliance with ESS2.

Therefore, the Central Basin Component's labor risks are "moderate", so it is not necessary to prepare a separate LMP. The TORs will identify worker safety impacts and propose management requirements accordingly.

1. Summary

The CWRC has established a sound labor management sound, and clear written guidelines and procedures. In general, the CWRC's practices and performance in labor management comply with ESS2, but it lacks requirements for labor management at the project level (e.g., contracted and primary supply workers).

The CWRC will ensure that its labor management system and procedure comply with ESS2 when preparing for and implementing the Central Basin Component.

2. HR and organization

The CWRC is a special river basin management organization under the Ministry of Water Resources, and consists of 18 agencies, 15 secondary public institutions and 5 directly affiliated enterprises. It has a workforce of about 15,000, including 7,600 professionals.

The CWRC HR Dept. is responsible for HR policy making and revision, daily operations and performance review (recruitment, training, remuneration, social insurance, etc.), and performance evaluation, and consists of the Labor, Social Security and General Affairs Section, Official Section, Civil Servant Section, Personnel Quota Section, Talent and Training Section, etc.

Grievance redress is a cross-departmental matter, including the human resources deparment, General Office (HR Dept.), trade union, and office for letters and visits. The GRM operates well and is appropriate.

Evaluation and conclusion: The CWRC has in place dedicated and qualified HR staff to manage daily-operations and address grievances with its direct workers. This is considered in alignment with the requirements of the ESS2 on responsible staff for managing direct workers.

3. Policies and procedures

CWRC has established sound HR policies, which strictly follow the PRC's Labor Law, and other relevant laws and regulations. The PRC's laws and regulations on labor management are

[14] The administrative arrangement to formalize the organizational set-up for CPMO is to be confirmed before the end of Appraisal.

mainstreamed into the labor management policies and procedures of the CWRC, which are listed as follows:

- Job qualification and promotion management measures
- Attendance checking, overtime work and leave management measures
- Employee performance evaluation measures
- Trade union consolation management measures
- Management measures for reimbursement of medical expenses

Based on the above analysis, the CWRC has adopted a comprehensive labor management system, providing clear documented guidelines and procedures for managing labor and working conditions of direct workers, which have been well implemented in its daily HR management work.

Evaluation and conclusion: Following the PRC's labor laws and regulations, the CWRC has defined its labor management system through a series of policies and procedures, which are considered generally in alignment with the requirements of ESS2 on direct workers.

4. Age of employment

China's labor law defines minimum working age at 16, and specific protection is required for juvenile workers from 16 to 18. CWRC complies strictly with China's policy on the prohibition of child and forced labor, and involves neither child labor (under 16 years) nor forced labor. Qualified candidates should have received undergraduate or above education, with a minimum age of 21-22 years.

Evaluation and conclusion: In consideration of the nature of job positions, there is no underlying risk of child labor or juvenile worker (16-18 years old).

5. Terms and conditions

The CWRC's sample labor contract was provided for review. When signing a labor contract, the basic terms and conditions, including the term of specific job positions, work content and place of work, work time and rest time, labor remuneration, bonus and social insurances, labor protection, labor conditions and protection against occupational hazards, and economic compensation shall be specified. While performing the labor contract, the worker can consult the HR department for personnel related issues at any time, and both parties may change the content of the labor contract upon prior consensus. Working hours are in alignment with the PRC's regulations and overtime working if happens is compensated for following China's policy on overtime payment.[15]

The CWRC practices a working system of 5 working days per week, from Monday to Friday, and encourages its workers to take leaves to balance life with work. Employees are entitled to paid leaves. For example, if an employee has a service length of one year or more but less than 10 years, he or she is entitled to a paid annual leave of 5 days; if an employee has a service length of 10 years or more but less than 20 years, he or she is entitled to a paid annual leave of

[15] In China, an enterprise is required (a) to pay no less than 150% of normal wages if the extended working hours are arranged on weekdays (b) to pay no less than 200% of the normal wages if extended hours are arranged on days of rest and no deferred rest can be taken; and (c) to pay no less than 300% of the normal wages if the extended hours are arranged on statutory holidays.

10 days; if an employee has a service length of 20 years or more, he or she is entitled to a paid annual leave of 15 days. National holidays and days off are not included in annual leaves.

The CWRC's workers are entitled to statutory social insurance (endowment, medical, unemployment, accident, maternity, etc.), and a housing provident fund.

Female employees' extra benefits are based on the applicable state and local regulations, such as an extra half-day leave on Women's Day, and a paid maternity leave of at least 98 days, including 15 days before childbirth. During maternity leave, the benefits for the employees will remain the same.

Evaluation and conclusion: China's Labor Law and the Labor Contract Law have clear provisions on employment, labor contract management and leaves, and the CWRC's relevant practices comply with such provisions, and are communicated to all employees through induction training, on-the-job training and routine operations. In terms of contract terms and working conditions for direct workers, there is no gap between the CWRC's practices and ESS2.

6. GRM

The GRM for the CWRC's workers is embedded in its existing labor management system. Workers can raise their workplace concerns though various in place channels such as the trade union, department heads, HR Dept., and office for letters and visits within the CWRC. The CWRC's labor management system does not impede the worker's right to access to arbitration procedure and/or judicial system to seek resolution on the grievances.

Any kind of reasonable grievances raised by the workers will be timely redressed and the complaint will be informed of the resolution. Workers are easily and equally accessible to the GRM, which was reported well-functioning and deemed adequate.

Evaluation and conclusion: The CWRC has put in place multiple well-functioning internal channels for collecting and addressing workplace grievances. Its staff is aware of the GRM and understands the labor inspection or judicial system available that they can resort to when internal mechanism could not address the grievances appropriately. The GRM complies with ESS2.

7. Labor risk management for TA activities

As discussed above, the CWRC has established a sound HR management system, and relevant policies and procedures. However, the CWRC's current HR system does not set out the provisions to manage the labor risks associated with relevant contracted or primary supply workers, which is an obvious gap from ESS2.

For the Central Basin Component involving research and capacity building activities mainly, since the consulting agency is usually a large research institute or university with sound labor management measures, a good working environment, a well-established trade union, and a sound worker GRM, workers are well-educated to protect themselves. The procurement will be conducted through a conforming bidding procedure, a procurement contract signed, and funds disbursed timely. The labor risks associated with the staff of TA implementation agencies would be moderate, which are mainly related to the health and safety risks in fieldwork (including COVID-19 risks), and whether the payment of travel subsidies can be paid in full and timely as per laws and regulations.

At the implementation stage, the CPMO will set out the provisions to manage and monitor the labor and working conditions risks to contracted workers in the TORs. The indicative provisions have been included in ***Appendix 2***.

Appendix 2 Basic Requirements for E&S Section of the TORs

To ensure that TA activities are prepared for, implemented and completed in accordance with the ESMF, and the Bank's ESF and ESSs, the TORs should include (but not limited to) the following:

- Reviewing and confirming the relevance of the TA activities and their downstream E&S impacts with the Bank ESSs.
- Reviewing and confirming management tools proportionate to the TA activities and their downstream E&S impacts / risks, including an E&S analysis chapter, SESA, CIA, etc.; developing a detailed E&S impact research plan, conducting relevant studies, and proposing E&S risk mitigation measures.
- Developing the plan/arrangement for enforcing stakeholder engagement (as part of the TA work plan), conducting stakeholder engagement activities, releasing relevant information, and including stakeholder feedback in E&S outcomes.
- Monitoring and reporting the E&S performance of the TA activities; and
- Appointment, qualification requirements and input of E&S experts
- Requirements on management of labor risks of TA activities staff, such as:
    - Actons and measures to consider and address travel health and safty risks in connection with travel and the field studies for the pertinent TA activity;
    - Solid commitment to disbusing wages, benefits and travel subdidies in full and on time per the laws and regulations;
    - Arrangements for regular induction and health and safety training to workers.
    - Measures to prevent and control of communicable diseases, COVID-19;
    - Awareness campaign of workers in mitigating the contracting of communicable diseases, and the spread of COVID-19; and
    - Sound in-place grievance reddress mechanism(s) to promptly respond to the grievances raised by the workers.

Appendix 3 Indicative Template of E&S Performance Report

Note: The CPMO will submit an annual E&S performance monitoring report to the Bank to evaluate ESMS implementation, E&S performance and potential gaps, and propose improvement measures.

1 Report preparer

Report prepared by: (name and title)
Telephone:
E-mail:
Report date:

2 Organizational structure and E&S document preparation

Describe the following information (but not limited to)

1) Describe the organizational structure for E&S management.
2) List the persons in charge of E&S and their contact information (name, address, telephone number and e-mail address).
3) List the training on the ESF, ESMF and SEF offered to the CPMO and TA implementation agency.
4) List the preparation activities for the TA activities, and E&S documents prepared, including TORs, stakeholder engagement activities, etc.

See attached table, Summary of E&S Document Preparation, and Implementation, for reference.

3 Implemented TA activities

Provide key information on implemented TA activities.
Describe the implementation of the ESCP.

4 Stakeholder engagement and GRM

Please list all information disclosure and public participation activities in the reporting period.

Please list any effective grievance or dispute (including court action) regarding E&S complaints received by each subproject during the reporting period. Describe how these were addressed and their status.

5 Challenges in ESMS implementation

Please describe the main challenges and difficulties in ESMS implementation.

6 Conclusion and suggestions

Attached Table: Summary of E&S Document Preparation and Implementation

Cut-off date: _____ (MM/YY)

No.	Research area	Topic	Type	Starting time	Expected time of completion	E&S document requirements	E&S document preparation	Any significant E&S event[16] during the reporting period? If yes, please specify	Current E&S status/any changes since last report	Other

[16]Examples of significant incidents such as: chemical and/or hydrocarbon materials spills; fire, explosion of unplanned releases, including during transportation; ecological damage/destruction; local population impact, complaint or protest; failure of emissions or effluent treatment; legal/administrative notice of violation; penalties, fines or increase in pollution charges; negative media attention; chance cultural finds; labor unrest or disputes; or local community concerns.