



OFFICIAL USE ONLY

R2017-0146/1

June 13, 2017

**Closing Date: Friday, June 30, 2017
at 6 p.m.**

FROM: Vice President and Corporate Secretary

China - Three Gorges Modern Logistics Center Infrastructure Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed loan to China for a Three Gorges Modern Logistics Center Infrastructure Project (R2017-0146), which is being processed on an absence-of-objection basis.

Distribution:

Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank Group authorization.

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD1902

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF

US\$200 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR THE

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

June 9, 2017

Transport & ICT Global Practice
EAST ASIA AND PACIFIC REGION

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

(Exchange Rate Effective November 11, 2016)

Currency Unit = Renminbi (RMB)
RMB1.00 = US\$0.147
US\$1.00 = RMB6.81

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BIA	Baiyang Industrial Area	LP	Logistics Park
BIP	Baiyang Industrial Park	MOF	Ministry of Finance
BLP	Baiyang Logistics Park	NCB	National Model Bidding
CIA	Cumulative Impacts Analysis	NPV	Net Present Value
DRC	Development and Reform Commission	PDO	Project Development Objectives
EA	Environment Assessment	PIU	Project Implementation Unit
EHS	Environmental, Health and Safety	PLG	Project Leading Group
EIRR	Economic Internal Rate of Return	PMO	Project Management Office
ESIA	Environmental Safeguard Impact Assessment	QBS	Quality- Based Selection
ESMP	Environment Safeguard Management Plan	QCBS	Quality- And Cost- Based Selection
FM	Financial Management	RAP	Resettlement Action Plan
FMM	Financial Management Manual	RoRo	Roll-On Roll-Off
GDP	Gross Domestic Product	SOE	State-Owned Enterprises
GHG	Greenhouse Gas	TA	Technical Assistant
GRS	Grievance Redress Service	TEU	Twenty-Foot Equivalent Unit
HPAO	Hubei Provincial Audit Office	TGPA	Three Gorges Port Authority
HPFD	Hubei Provincial Finance Department	VECs	Valuable Ecological Components
ICB	International Competitive Bidding	YMG	Yichang Municipal Government
ITS	Information Technology System	YREB	Yangtze River Economic Belt
IWT	Inland Water Transport	YTIC	Yichang Transport Investment Company

Regional Vice President:	Victoria Kwakwa
Country Director:	Bert Hofman
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager:	Binyam Reja
Task Team Leader:	Hua Tan

CHINA
Three Gorges Modern Logistics Center Infrastructure Project

TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	1
A. Country Context.....	1
B. Sectoral and Institutional Context.....	2
C. Higher Level Objectives to which the Project Contributes	6
II. PROJECT DEVELOPMENT OBJECTIVES	7
A. PDO.....	7
B. Project Beneficiaries	7
C. PDO Level Results Indicators.....	7
III. PROJECT DESCRIPTION	7
A. Project Components	7
B. Project Financing	9
C. Project Cost and Financing	9
D. Lessons Learned and Reflected in the Project Design.....	10
IV. IMPLEMENTATION	11
A. Institutional and Implementation Arrangements	11
B. Results Monitoring and Evaluation	11
C. Sustainability.....	11
V. KEY RISKS	12
A. Overall Risk Rating and Explanation of Key Risks.....	12
VI. APPRAISAL SUMMARY	13
A. Economic and Financial Analysis.....	13
B. Technical.....	13
C. Financial Management.....	15
D. Procurement	15
E. Social (including Safeguards).....	16
F. Environment (including Safeguards).....	17

G. World Bank Grievance Redress	18
Annex 1: Results Framework and Monitoring	19
Annex 2: Detailed Project Description.....	26
Annex 3: Implementation Arrangements	31
Annex 4: Implementation Support Plan	39
Annex 5: Demand Analysis	42
Annex 6: Economic Analysis.....	49
Annex 7: Financial and Fiscal Analysis	53

PAD DATA SHEET

China

Three Gorges Modern Logistics Center Infrastructure Project (P153473)

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

Transport & ICT Global Practice

Report No.: PAD1902

Basic Information			
Project ID P153473	EA Category A - Full Assessment	Team Leader(s) Hua Tan	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 30-Jun-2017	Project Implementation End Date 30-Mar-2023		
Expected Effectiveness Date 30-Oct-2017	Expected Closing Date 30-Sept-2023		
Joint IFC No			
Practice Manager/Manager Binyam Reja	Senior Global Practice Director Jose Luis Irigoyen	Country Director Bert Hofman	Regional Vice President Victoria Kwakwa
Borrower: People's Republic of China			
Responsible Agency: Yichang PMO			
Contact: Telephone No.:	Hongyan Ma 0086-717-6346489	Title: Email:	PMO Director yichangpmo@sina.cn
Project Financing Data(in USD Million)			
[X] Loan	[] IDA Grant	[] Guarantee	
[] Credit	[] Grant	[] Other	
Total Project Cost:	446.00	Total Bank Financing:	200.00
Financing Gap:	0.00		
Financing Source			Amount

Borrower	246.00
International Bank for Reconstruction and Development	200.00
Total	446.00

Expected Disbursements (in USD Million)

Fiscal Year	2018	2019	2020	2021	2022	2023				
Annual	5.00	15.00	25.00	50.00	50.00	55.00				
Cumulative	5.00	20.00	45.00	95.00	145.00	200.00				

Institutional Data

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

Proposed Development Objective(s)

The PDO is to improve freight transport and logistics services in Yichang.

Components

Component Name	Cost (USD Millions)
Baiyang Port and Operations Area	123.21
Baiyang Logistics Park	252.37
Transport Connection Infrastructure	34.25
Baiyang Logistics Information Platform and Facilities	11.09
Capacity Building	2.95

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Low
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Substantial
8. Stakeholders	Low
9. Other	
OVERALL	Substantial

Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No []	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Technical Assistance consistent with Bank safeguard policies	X		
Description of Covenant			
Project Agreement Schedule, Section I.C.3. The Project Implementing Entity, through Yichang, shall ensure, and cause YTIC to ensure, that all studies and technical assistance to be supported under the Project are carried out under terms of reference satisfactory to the Bank, and that such terms of reference are consistent with, and pay due attention to, the Bank's Safeguards Policies.			
Name	Recurrent	Due Date	Frequency
Business Plan		No later than two years after the Effective Date	
Description of Covenant			
Project Agreement Schedule, Section IV.A.1. Yichang shall have finalized the preparation of the detailed business plan referred to in Part 5(a)(i) of the Project, under terms and conditions			

acceptable to the Bank, comprising the development and undertaking of transparent and competitive selection guidelines and processes for service contractors, joint venture partners, and/or public-private partnership concessionaires.

Name	Recurrent	Due Date	Frequency
Operation and Management Arrangements		September 30, 2022	

Project Agreement Schedule, Section IV.A.2. Taking into consideration the findings and recommendations of the detailed business plan and guidelines referred to in Project Agreement Schedule, Section IV.A.1, by no later than September 30, 2022, the Project Implementing Entity, through Yichang, shall have established adequate operational and maintenance arrangements for the Baiyang Port and the Baiyang Logistics Park supported under the Project, acceptable to the Bank.

Name	Recurrent	Due Date	Frequency
Annual Work Plan	X		Yearly

Project Agreement Schedule, Section I.A.4. The Project Implementing Entity, through Yichang, shall, and shall cause YTIC to: (i) prepare and finalize Annual Work Plans for each year of project implementation, acceptable to the Bank, by December 31 of each year; and (ii) ensure the implementation of the Project during the following calendar year in accordance with the relevant Annual Work Plan.

Conditions

Source Of Fund	Name	Type
IBRD	Subsidiary Agreement	Conditions of Effectiveness

Description of Condition

Loan Agreement, Article 5.01(a) and Project Agreement Schedule, Section I.A.2. A Subsidiary Agreement, acceptable to the Bank, has been executed on behalf of Yichang and YTIC.

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Hua Tan	Team Leader (ADM Responsible)	Senior Transport. Specialist	Transport	GTI10
Weimin Zhou	Co-Team Leader	Transport Specialist	Transport	GTI10
Zheng Liu	Procurement Specialist (ADM Responsible)	Procurement Specialist	Procurement	GGO08
Fang Zhang	Financial Management Specialist	Financial Management Specialist	Financial Management	GGO20

Alejandro Alcala Gerez	Senior Counsel	Senior Counsel	Legal	LEGES
Xin Ren	Safeguards Specialist	Senior Environmental Specialist	Environment	GEN2A
Chaogang Wang	Safeguards Specialist	Senior Social Development Specialist	Social	GSU05
Bernard Aritua	Peer Reviewer	Senior Infrastructure Specialist	Inland Waterways	GTI06
Luis Blancas	Peer Reviewer	Senior Transport. Specialist	Transport	GTI02
Baher El-Hifnawi	Peer Reviewer	Lead Transport Economist	Transport	GTI03
Joanna Mclean Masic	Peer Reviewer	Senior Urban Spec.	Urban	GSU08
Chunlin Zhang	Peer Reviewer	Lead Private Sector Specialist	Trade and Competitiveness	GTC02
Martha Lawrence	Peer Reviewer	Senior Railway Specialist	Transport	GTI06
Ruifeng Yuan	Team Member	Program Assistant	Operational Support	EACCF
Maria Luisa G. Juico	Team Member	Program Assistant	Operational Support	GTI02
Anita Shrestha	Team Member	Transport Analyst	Transport	GTI02
Ninan Oommen Biju	Team Member	Senior Port Specialist	Port	GTI02
Rajagopal S. Iyer	Team Member	Consultant	Advisor	GSURR
Randeep Sudan	Team Member	Adviser	Technical Advisor	GTIIC
Shunong Hu	Team Member	Senior Water Engineer	Water	GWA02
Yin Yin Lam	Team Member	Senior Transport. Specialist	Transport	GTI02
Zichen Zhang	Team Member	Consultant	Transport	GTI02
Extended Team				
Name	Title	Office Phone	Location	
Dick Bullock	Transport Economics and Logistic Expert			
Harrie de Leijer	IWT, Port and Logistic Consultant			

Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
China	Hubei	Yichang		X	
Consultants (Will be disclosed in the Monthly Operational Summary)					
Consultants Required? Consultants will be required					

I. STRATEGIC CONTEXT

A. Country Context

1. China's economy grew at an average of ten percent per year for the three decades prior to 2012 by following a growth strategy of heavy infrastructure investment, exports, and resource intensive manufacturing. While this strategy has created an impressive success story of economic performance, it has also introduced income inequalities (personal and regional), high levels of pollution, urban congestion, and high levels of greenhouse gas (GHG) emissions. Against this background, since 2012 China has started to gradually shift from heavy infrastructure investment, export, and resource-intensive manufacturing to domestic consumption and service-based industries in an effort to rebalance the economy for sustainable growth while also addressing social and environmental issues.

2. The rebalancing of the Chinese economy has a spatial component. Industrial production and new economic sectors are shifting or being established in new economic zones in the less developed inland regions. The designation of the Yangtze River Economic Belt (YREB) as a principal economic corridor is a key national strategy to promote the industrial development of inland regions by expanding or relocating industries from the traditional manufacturing hubs in the east, such as the lower reaches of the Yangtze River Delta, to the middle and upper reaches of the Yangtze River. The YREB covers nine provinces and two municipalities (Shanghai, Jiangsu, Zhejiang, Anhui, Jiangxi, Hubei, Hunan, Chongqing, Sichuan, Yunnan, and Guizhou) with a total area of 2.05 million square kilometers. It accounts for more than 40 percent of China's Gross Domestic Product (GDP).

3. At the core of the YREB strategy is the intensive utilization of the Yangtze River as a freight transportation corridor. About 60 percent of the total freight volume on China's inland waterway travels along the Yangtze River, which saw cargo traffic rise to 2.18 billion tons in 2015, up 45 percent from 2010. In 2014, the State Council issued "Guidelines on Yangtze River Golden Waterway and Economic Belt Promotion" and "Yangtze River Economic Belt Comprehensive Three-dimensional Transport Corridor Plan (2014 - 2020)". A transportation plan, released as an appendix to these Guidelines, calls for an integrated transport system that connects roads, railways, and air routes by 2020.

4. Hubei Province, where the Project is located, is situated in central China along the middle reaches of the Yangtze River. It is at the crossroads of the east-west Yangtze River inland waterway transport (IWT) corridor that connects the western regions with the Yangtze River Delta in the east and the south-north expressway and railway corridor that connects the north-central regions with the Pearl River Delta in the south. Wuhan, the capital city of Hubei, is located on the Yangtze River, and is the economic center in the central region and a national transport hub located on the Yangtze River.

5. Yichang, the Project city, is a prefecture level city located upstream from Wuhan on the Yangtze River. It is home to the Three Gorges Dam. Yichang has been a major distribution center, transit node, and trading post in the central western region. Considered a gateway to the west, Yichang is where topography transitions from the vast fertile plain in the east to the mountain ridges in the west. Before expressways and high speed railways became available in

recent years, the only viable access to the resource rich Sichuan Basin and points to the west on the Yangtze River was through Yichang. Recognizing its strategic location, the State Council designated Yichang as one of six regional transport hubs for strategic development in 2014.

6. Yichang's economy is ranked second to Wuhan in Hubei province and is dominated by secondary industries. It has been a major producer of tea and tangerine, phosphate ore and associated agricultural and industrial products, construction materials, and chemical and pharmaceutical products. As a second tier city and a traditional industrial base, Yichang has only recently started to develop its service sector and high value-added industries. Since 2013, Yichang municipal government has focused on developing six high value-added "new industries", namely fine chemicals, bio-pharmaceuticals, high tech equipment manufacturing, new materials, cultural tourism, and modern logistics services. These "new industries" are mostly upgrades of Yichang's flagship traditional industries. In support of the economic transition, Yichang's long-term plan centers on developing tourism, industrial and commercial clusters along the Yangtze River to fully leverage accessibility to IWT, and connectivity to the railway and expressway systems.

B. Sectoral and Institutional Context

7. Logistics costs are high in China at 18 percent of GDP compared to eight percent in the US due to the fact that China's GDP is mostly made up of primary and secondary industries that require more logistics, as well as inefficiencies in the logistics supply chains¹. This situation applies, in particular, to the YREB and Yichang.

8. **Given the high logistics cost of doing business in China, Yichang's ability to deliver cost competitive logistics services will be an important success factor in its transition to become a high value-added industrial base, both in developing "new industries" and attracting established businesses from the coastal regions.** For the "new industries", logistics services are a critical link of the supply chain because a majority of the finished products are shipped to the coastal and western regions, and raw materials are sourced from within the central region, for instance acetone from Henan Province and steel from within Hubei Province.

9. **Yet, Yichang's existing logistics infrastructure is inadequate to support the anticipated economic growth.** A survey of 20 local manufacturing businesses indicates that while a large share of businesses owns warehouses (85 percent), trucks (40 percent), and loading and unloading equipment (45 percent), the level of automation and information management is low². Although 30 percent of the businesses surveyed own information management systems, only five percent own information management equipment, such as barcode scanners. Manual work is prevalent in managing and handling goods. As indicated by the survey, there is a growing demand for warehouses with more automated and material handling equipment (35 percent of the 20 businesses surveyed), inventory management (55 percent), information sharing (50 percent), processing (40 percent), and urban distribution and long distance transport (50 percent).

¹ *Logistics in China*. Goldman Sachs. November 2015.

² *Feasibility Study Report*. February 2016.

10. **As Yichang's economy develops, logistics services beyond basic trucking and warehousing have been in increasing demand.** A survey of 16 shipping companies and six trucking and / or warehousing companies that operate in Yichang indicates that existing logistics services are simple, with a large number of logistics service providers offering a single service, for example transport (39 percent of the 22 companies surveyed) and warehouses (17 percent). Small warehouses are scattered and not comprehensively planned with transport hubs, which results in inefficient transport route planning and lack of consolidation for increased freight load per trip. Value-adding services provided by logistics companies, such as inventory management or packaging for local markets, are insignificant; integrated logistics services or supply chain management account for only six percent by value.

11. A strategic growth area for Yichang's logistics service sector is container related value-added service. The existing ports in Yichang lack adequate warehouses for containers. Shipping companies have to rent warehouses that are located further away from the port area. Tracking locations of containers within the port generally entails a bike ride by staff to manually look for the containers and record the locations. Additionally, pick-and-pack, labeling, weighing, cleaning and other container related services are generally unavailable. In 2014, of the 130,000 twenty-foot equivalent units (TEUs) that passed through Yichang Port, 23 percent were for exports, for which customs clearance was completed in Wuhan or Shanghai, further increasing shipping costs and time.

12. **In addition, utilization of the more cost effective multimodal freight transport is limited due to lack of connectivity between modes.** Freight transport in Yichang is dominated by road transport, an increasingly expensive mode due to heavy tolls, the rising cost of labor and an older inefficient vehicle fleet. For manufacturing businesses, IWT, road-IWT and road-rail account for 5, 10 and 5 percent of freight transport, respectively. Utilization of rail-IWT is minimal due to lack of direct rail connection to ports. Yichang Municipal Government (YMG) has recognized that the use of multimodal transport, such as IWT-rail over long distances, should be encouraged as it is more environmentally sustainable over the numerous individual trucking services.

13. **As a major port on the upper middle reaches of the Yangtze river, Yichang Port has experienced rapid traffic growth in the past 10 years.** The Yichang Port system is made of six port groups: Central City, Xing'shan, Zi'gui, Yi'du, Zhi'jiang and Chang'yang. Over the last 10 years, the throughput of Yichang Port as a whole has increased from 24 million tons to 78 million tons, at an average growth rate of 12 percent per annum. However, a majority of the ports lack specialized handling equipment and comprehensive logistics services.

14. Container traffic accounted for only 2.8 percent of Yichang Port's volume in 2014; however, it has grown at 23 percent per annum from 2010 to 2014. Yet, future container growth is severely constrained by the lack of capacity at the existing Yunchi Container Port, which is part of the Central City port group. Additionally, the current Yichang Port development plan calls for the relocation of freight traffic, especially bulk freight, away from ports located in the central city area. The displaced freight traffic will be redirected to existing and proposed new ports outside of the city center. Once this reallocation is completed, future growth of Yichang Port will continue to increase in line with economic growth. A more detailed discussion of the freight demand forecast is given in Annex 5.

15. **To promote competition, Yichang Municipal Government (YMG) has consolidated regulatory oversight into an independent regulator of ports and associated infrastructure and left operation of the ports to the commercial sector, in Yichang’s case, the various state owned enterprises (SOEs).** The Three Gorges Port Authority (TGPA), established in 2014, is responsible for regulatory approvals of ports and associated infrastructure planning, development, operation and management. Under the oversight of TGPA, the SOEs develop, manage and operate individual ports or port groups. The project management office (PMO) for the proposed project is housed within TGPA, while the project implementation unit (PIU) is Yichang Transport Investment Company (YTIC), an SOE established in 2003. YTIC is entrusted by YMG to develop, finance, operate and manage ports and associated infrastructure in Yichang. At present YTIC is developing the new Maoping Port upstream from the Three Gorges Dam. It is designed to be a major transshipment port for traffic bypassing the dam. In addition, YTIC has a minority ownership in the existing Yunchi Container Port.

16. **The proposed Baiyang Port and Logistics Park (the “Project”) will be the first greenfield integrated multimodal transport and logistics hub in Yichang, supported by a modern ICT system.** It is located in the Baiyang Industrial Park (BIP), a new high value-added manufacturing development zone situated 40 km downstream of Yichang and 70 km downstream of the Three Gorges Dam. The Project is well connected to the national expressway network. A new 675-meter overpass will connect the Project site to the nearby Ziyun Railway marshalling yard, through which the port and logistic park financed under the proposed project will be connected to the national railway network. The Project will serve as an important node in the east-west road-IWT and rail-IWT corridors.

17. The proposed Project will also serve the logistics needs of both Yichang Municipality and the Baiyang Industrial Park that focuses on fine chemicals, equipment manufacturing, new materials and other higher value-added light manufacturing. In addition to storage and warehouses, the Project will specialize in value-added logistics services supporting container shipments and manufacturing goods and products. At present, BIP has an occupancy rate of more than 50 percent; a majority of the businesses in the park are local, with a small but increasing number of businesses coming from the coastal regions. As of 2014, the BIP has attracted investments of US\$1.2 billion; an additional US\$4.4 billion is expected to be invested by 2020.

18. **In the medium to long term, the proposed Project in conjunction with the upstream Maoping Port will provide transshipment for long distance cargo movements bypassing the Three Gorges Dam.** Yichang's proximity to the Three Gorges Dam creates an opportunity for the city to become an important transshipment hub. Total IWT freight passing through the Three Gorges Dam is expected to reach 163 million tons by 2020 and 248 million tons by 2030. Its current operational capacity of 100 million tons was reached in 2011. About 80 percent of the current volume is bulk (construction materials, minerals and coal) or semi bulk (fertilizer, cement, steel) but most of the growth in future years is expected to be domestic container and general cargo freight. Upstream of the Three Gorges Dam, the Maoping Port is under construction. The port, with roll-on roll-off (RoRo) and general cargo berths, is to provide transshipment for IWT-highway freight transport. Both the Project and Maoping Port are owned and developed by YTIC.

19. **There is increasing demand for sophisticated logistics facilities and services in Yichang. Yet, without public sector support, Yichang’s fragmented logistics service sector will remain underdeveloped for the time being due to lack of sector leaders or big companies with sufficient scale, capability, and financial capacity to undertake large logistics infrastructure development, which is required for establishing a competitive efficient logistics service sector.** Initial market sounding of potential investors indicated high expected return on investment due to substantial development risk, which will make the proposed Project financially impractical for YMG. Fully aware of the challenges, and recognizing the strategic role of the proposed Project in facilitating Yichang’s logistics sector development, YMG designated YTIC as the public sector lead in the overall development of the proposed Project. Additionally, YMG, through the Government of China, requested World Bank support in financing and technical assistance. Initial financial analysis demonstrated that without the IBRD loan and on the basis of commercial financing alone, the proposed Project will not be financially viable.

20. **In addition to financing the first greenfield integrated port and logistics park in Yichang, the Bank will provide financing for important technical assistance (TA) to help YTIC engage well qualified operators in the Project’s operation and management, and explore opportunities of potential social capital or private equity investment during operation of the logistics park and port.** YTIC plans to engage closely with the private sector, including international players, to leverage private sector best practices and efficiencies in the proposed Project’s operation and management. The Bank financed TA activities will support YTIC in: (i) preparing a detailed business plan; (ii) deciding the right operation models (service contract, joint venture, or public-private partnership concession) that will best leverage private sector expertise and efficiency during operation; (iii) undertaking of transparent and competitive selection processes for the port and logistics park operators; (iv) drafting financial, legal and operational agreements; and (v) evaluating potential opportunities of social capital or private equity investment for greater financial flexibility for either capital expansion under favorable market conditions or reducing debt obligations, once operations commence.

21. **Value Added of Bank Support.** The proposed Project provides an opportunity for the Bank to actively support YMG in a pilot demonstration of developing and operating the first greenfield integrated multimodal transport and logistics hub in Yichang. Yichang’s logistics service sector, which is in the early stage of development, is unlikely to grow without significant public investment in land and infrastructure, which comes with substantial risk that the private sector is unable or unwilling to take at this stage. The Bank’s participation will not only contribute to the proposed Project’s financial viability, but also long-term commercial success by bringing international best practices and development experience for project design, operation, and management. The proposed Project, with direct connection to the Yangtze River, the railway network, and the national expressway system will be the first such facility in Yichang. As such, the Bank’s capacity building and technical assistance programs will support the training and development of a capable management team and skilled work force, the formulating of strategies for efficient multimodal freight transport route planning, and long-term monitoring and evaluation of environmental and social impacts in the region.

22. During project preparation, Bank support focused in the areas of: (i) demand analysis; (ii) preliminary business plan; (iii) operations planning, including the design of implementation

support for transparent and competitive selection processes of port and logistics park operators; (iv) design of value-added services in the logistics park; (v) flexibility in port and logistics park design for subsequent build-up by private companies tailored to their specific business needs; (vi) functional integration of the port and logistics park; (vii) promotion of container traffic and associated logistics services; and (viii) design of the information platform. The emphasis on ensuring commercial success of the proposed Project and the bottom-up planning approach that focuses on existing and anticipated market dynamics complements the conventional top-down planning practices in China. As China continues developing an efficient and environmentally sustainable multimodal freight transport network and logistics hubs, the market based planning process will serve as good practices for replication in other regions.

23. The process developed under the Project for the transparent and competitive selection and hiring of the best qualified private operators will serve as pilots for scale-up in the development of logistics sector in China. This is especially relevant as the less developed provinces in the central and western regions are actively building their logistics service sectors under strong central government policy support. By actively engaging the private sector, there is good potential for private capital investment in the proposed Project during operation, which will give YTIC greater financial flexibility for debt repayment or capital expansion. For instance, YTIC can use private capital to develop additional transport or logistics infrastructure if market demand is strong, or use private capital to refinance commercial or IBRD loans.

C. Higher Level Objectives to which the Project Contributes

24. **Country Partnership Strategy.** The proposed project is aligned with two of the three main pillars of the 2013-2016 World Bank Group's Country Partnership Strategy (CPS) for China (Report No. 67566- CN), discussed by the Board of Executive Directors of the World Bank on November 6, 2012: support greener growth and promote more inclusive development. Advanced logistics information systems and a multimodal freight transport hub, coupled with a logistics services hub, will promote greener growth (Pillar I) by improving transport and the efficiency of logistics services, as well as greater utilization of greener modes of transport. Utilizing waterways will reduce carbon emissions and air pollution from road transport, while maintaining competitiveness and promoting economic growth.

25. **Twin Goals.** The project will support more inclusive development (Pillar II) by facilitating development of logistics service sector in Yichang, which will create low and medium-skilled jobs for the benefit of the low-income population. Additionally, efficient logistics service will enable the development of neighboring small towns and provide job opportunities to the nearby population. Targeted logistics-related vocational training, focusing on project affected people and women in the project area, is planned as part of the project's social development strategy. Such training will improve employment opportunities for women in the region. As a result, this project supports the promotion of shared prosperity.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

26. The project development objective (PDO) is to improve freight transport and logistics services in Yichang.

B. Project Beneficiaries

27. The main beneficiaries are the businesses in the Project area, which will benefit from the integrated supply chain services at the logistics park supported by a logistics information platform, and the adjacent multimodal freight transport services. Local residents will benefit from the job opportunities created during project construction and subsequent operation. The proposed Project will create about 1,500 job opportunities, of which 270 are particularly suitable for women; women will be actively recruited for these positions.

C. PDO Level Results Indicators

28. The achievement of the PDO will be measured through the following key performance indicators:

- (a) Throughput in Baiyang Port (PDO element: improve freight transport)
- (b) Percentage of container throughput in Baiyang Port (PDO element: improve freight transport)
- (c) Empty-running rates of freight trucks in/out of Baiyang Logistics Park (PDO element: improve logistics services)
- (d) Businesses in Baiyang logistics park that use the project funded information system (PDO element: improve logistics services)

III. PROJECT DESCRIPTION

A. Project Components

29. Given the inherent risk of developing the first greenfield integrated port and logistics hub in Yichang, the proposed Project will be implemented in a phased manner to provide flexibility in customizing the facilities based on the needs of tenants and operators. Construction of specialized facilities and purchase of specialty equipment, which are more expensive but high value-added, will be carried out in implementation Years 4 and 5 after the demand for specialized facilities and equipment is thoroughly analyzed and clearly defined in the business plan (which will be completed in implementation Years 1 to 2). The business plan, based on extensive market research and analysis, will clearly define the Project's mission and value proposition, and provide recommendations of operation models. Extensive inputs from logistics value chain stakeholders will be collected and analyzed. The Project's role in optimizing supply chain services will be clearly defined. Anchor tenants and strategic partners will be identified and evaluated in the marketing plan, which will be a part of the business plan.

30. Investment decisions on approximately 20 percent of the logistics park and six percent of the port will be made in Year 3 and carried out during Years 4 and 5. For the port, the phased approach mainly applies to specialty equipment purchase.

31. The Project comprises five components, as outlined below. A detailed Project Description is provided in Annex 2.

32. **Component 1: Baiyang Port and Operations Area (total cost US\$123.21 million, IBRD loan US\$71.18 million, 29% of project cost).** This component will finance the construction of: (i) three container and four bulk cargo berths; and (ii) supporting infrastructure, including, *inter alia*, cargo and container yards, and the purchase and installation of equipment for cargo loading and unloading. Yichang Municipality completed construction of six berths in the fall of 2016. After completion of testing and commissioning, operation started in March 2017. On completion of the proposed Project, there will be 13 berths in Baiyang Port.

33. **Component 2: Baiyang Logistics Park (total cost US\$252.37 million, IBRD loan US\$92.99 million, 60% of project cost).** This component will finance the construction of three logistics service areas and the purchase and installation of basic equipment in the logistics park. The **Commercial Area** will provide logistic services primarily for: (i) urban distribution and logistics services associated with small-size consumer goods that require quick turnaround; (ii) value-added services for containers; and (iii) general services and administration offices. **Area A** will provide logistics services for large-size general cargo, while **Area B** will provide container logistics services. The logistics park will support 3PL companies serving Yichang Municipality as well as manufacturers and enterprises located inside the Baiyang Industrial Park.

34. **Component 3: Transport Connection Infrastructure (total cost US\$34.25 million, IBRD loan US\$24.50 million, 8% of project cost).** This component will finance the construction of: (i) an overpass road connecting Baiyang Port and the Logistics Park to Ziyun Railway's Shawan Marshalling Yard; (ii) surrounding roads and underground utilities, including Guihu Road and Songgang Second Road; and (iii) traffic signals, intersection channelization, and other traffic management facilities.

35. **Component 4: Baiyang Logistics Information Platform and Facilities (total cost US\$11.09 million, IBRD loan US\$7.88 million, 3% of project cost).** This component will finance: (i) acquisition and installation of computer hardware and related equipment for the Baiyang Logistics Information Platform; (ii) development of a platform to collect data and information at various points of the logistics service value chain; and (iii) development of a business application system to conduct big data analysis and provide key information for users, logistics service providers and enterprises.

36. The primary functions of the information center will be: (i) inventory management; (ii) vehicle fleet dispatch and location tracking; (iii) urban distribution management; and (iv) information services to logistics service providers and private enterprises. Its secondary functions will be to manage commercial activities in the logistics park, e.g., maintain a registry of enterprises and associated staff, and manage the security system (such as the CCTV network).

37. **Component 5: Capacity Building (total cost US\$2.95 million, IBRD loan US\$2.95 million, 1% of total project cost).** This component will finance the provision of: (a) technical assistance support for, inter alia: (i) the preparation of a detailed business plan, under terms and conditions acceptable to the Bank, for the development and undertaking of transparent and competitive selection guidelines and processes for service contractors, joint venture partners, and/or public-private partnership concessionaires; (ii) the preparation of plans and/or studies related to the development of Yichang as a key transport and logistics hub; (iii) the development and application of information technology in project management, operation and maintenance; (b) training and dissemination activities, and associated study tours; and (c) Project management activities.

B. Project Financing

38. **Lending Instrument.** The proposed lending instrument for this project is Investment Project Financing (IPF). The Borrower has selected a US Dollar denominated, commitment-linked variable spread loan, based on a six-month LIBOR plus an additional variable spread. The Borrower has also selected all conversion options and an annuity repayment profile, payment of front-end fee through the IBRD loan proceeds, and a repayment period of 30 years, including a six-year grace period.

C. Project Cost and Financing

39. The total cost of the proposed project, including financing costs, is US\$446 million, of which the proposed IBRD loan will finance US\$200 million. Yichang Municipal Government (YMG) will provide counterpart funding of US\$246 million, including US\$131 million from the municipal budget and US\$115 million from commercial loans.

Project Components	Project Cost (US\$ million)	IBRD Financing (US\$ million)	% IBRD Financing
Component 1: Baiyang Port and Operations area	123.21	71.18	57.77
Component 2: Baiyang Logistics Park	252.37	92.99	36.84
Component 3: Transport Connection Infrastructure	34.25	24.50	71.53
Component 4: Baiyang Logistics Information Platform and Facilities	11.09	7.88	71.02
Component 5: Capacity Building	2.95	2.95	100
Total Cost	423.87	199.50	47.01
Interest During Implementation	21.37	-	0
Front-end Fee	0.50	0.50	100
Commitment Fee	0.64	-	0
Total Financing Required	446	200	

40. YTIC is eligible to borrow directly from the market to provide counterpart financing for the project. Several domestic banks have issued letters of intent to provide a loan commitment of US\$115 million to YTIC for financing the proposed project.

D. Lessons Learned and Reflected in the Project Design

41. The project design benefited from: (i) experience gained and lessons learned from the Bank's engagement in China's waterway and port infrastructure development; (ii) the Bank's international experience in multimodal freight corridor development; and (iii) international best practices in developing integrated multimodal transport and logistics hubs. The following lessons have been incorporated in the project design.

- a. **Enabling integrated multimodal logistics services.** In more developed logistics markets there is an increasing demand for integrated logistics services. Specialized logistics companies service the end-to-end multi-modal supply chain, while shippers focus on their manufacturing competencies. The proposed Project, as an integrated, multimodal freight transport and logistics hub with modern ICT systems, will allow for the growth of such integrated services to be undertaken by private logistics companies. Being the first multimodal facility in Yichang, it will allow for the provision of multimodal transport services to shippers.
- b. **Enhancing the value proposition of the integrated multimodal facility.** Factors that enhance integrated multimodal facilities include: (i) adequacy and seamless connection of transport infrastructure serving different modes; (ii) availability of skilled logistics personnel; (iii) level of information services; and (iv) ease of private enterprises establishing a presence in the facility. These factors have been reflected in the project design through the following: adequate port infrastructure to connect with IWT is addressed by the expansion of Baiyang Port's capacity, while the Baiyang Logistics Park will provide logistics companies the facilities and space required for consolidation, value-added services and connection to various transport modes. The establishment of an information platform and transport connection infrastructure will maximize multimodal connections to expressways and railways.
- c. **Catering for the growth of containerization.** The project has been designed to accommodate anticipated high container traffic, a clear trend evidenced by the existing high container traffic (14 to 17 percent) on the Yangtze River. Three of the seven berths to be constructed under this project will be multi-functional berths, which allows flexibility. The project design also provides increased space for a stacking area on the land side, as well as container freight station activities in the logistics park.
- d. **Developing an Operations and Business Plan.** In order to achieve commercial success, it is critical for logistics parks to have a well-thought out operational and business plan. The project includes technical assistance to support the PMO in developing a detailed operations and business plan. A preliminary business plan was prepared during project preparation, which identified more than ten logistics companies as potential anchor tenants.

- e. **Ensuring capacity for project implementation and supervision.** To properly implement and manage safeguards, the project has incorporated the recommendations of the Uganda Transport Sector Development Project “Lessons Learned and Agenda for Action” report: (i) ensuring adequate borrower institutional capacity on environmental and social issues; (ii) identifying key environmental and social risks that need to be addressed; and (iii) handling complaints from affected individuals or communities.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

42. Yichang Municipal Government (YMG) has set up a Project Leading Group (PLG), a Project Management Office (PMO) and a Project Implementation Unit (PIU):

- a) The PLG, headed by the First Deputy Mayor, will be responsible for guiding overall project implementation. The PLG’s membership includes leaders of the relevant government departments and agencies.
- b) The PMO, housed in the Three Gorges Port Authority, will be responsible for coordination among different government agencies and supervision of the PIU, as well as communication with the Bank. It will be chaired by the Deputy Commissioner of the Three Gorges Port Authority and will have high level representatives from the municipal departments and YTIC.
- c) YTIC will be the PIU and will be responsible for detailed project implementation, including project procurement and financial management.

B. Results Monitoring and Evaluation

43. The Results Framework provided in Annex 1 will be the main tool for monitoring and reporting on the outcomes and intermediate outcomes of the project. The PMO will be responsible for project monitoring and evaluation, with additional inputs from the PIU. The PMO will furnish comprehensive semi-annual progress reports on all aspects of the project, including technical, financial, procurement, environmental and social, as well progress against the indicators in the Results Framework. It will also furnish a comprehensive mid-term report, highlighting implementation progress, issues affecting timely completion of the project and achievement of the PDO, and possible remedial actions. The mid-term review is expected to be carried out in 2020. The PMO will also take the lead in providing the necessary data for the Bank to prepare the project’s Implementation Completion and Results Report, as well as in the preparation of the Government’s assessment of the project.

C. Sustainability

44. The economic, social, and environmental benefits achieved through the implementation of the proposed project are expected to be sustained over a long period, in part due to the following:

- a) The demand forecast and financial analysis carried out during project preparation indicate that the facilities constructed under the project are expected to have adequate demand and financial flows to provide resources for maintenance and operations.
- b) The port and the LP would be operated by experienced operators (to be selected during implementation) who will provide quality services to sustain the demand for the facilities.
- c) The multimodal project design, including links to the railway line and efficient port services, would ensure that future freight traffic from the port and the LP would use the more environmentally sustainable railway and inland waterway transport modes.
- d) The project will generate employment opportunities for the local communities in the logistics industry. The project design includes specialized skills training, which will help people in the local communities find jobs in the logistics industry.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

45. The overall implementation risk rating for achieving the PDO is substantial, based on risks related to “institutional capacity for implementation and sustainability” and “environment and social” (see the systematic operations risk-rating tool - SORT - table in the Data Sheet).

46. **Institutional capacity for implementing and sustainability.** YTIC has limited experience in preparing and implementing a Bank financed project of this magnitude and complexity. The project design, therefore, includes technical assistance in the following areas: (i) project management including technical review, procurement, and financial management; (ii) land acquisition and resettlement monitoring; (iii) training and study tours to improve the management, administrative, and technical capacity of staff; and (iv) preparation of plans to support the proposed project’s operations and management.

47. **Environment and Social Risks.** Risks associated with construction and operation include impacts on the river environment, aquatic ecology, fisheries, navigation safety, ship waste management, leakage and contamination during loading/unloading operations, and social disturbance. In addition, the proposed project will require permanent land acquisition and cause physical displacement of households and enterprises. To mitigate the risks, common and site-specific mitigation measures are included in the Environmental and Social Management Plan (ESMP) and the Resettlement Action Plan (RAP). In addition, implementation support will be provided to ensure satisfactory implementation of the ESMP and RAP, e.g., long-term monitoring and evaluation of the project’s environmental and social impacts in the region is included as one of the TA activities.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

48. **Economic Analysis.** This Project is expected to yield a net present value (NPV) of RMB 1.4 billion and to achieve an economic internal rate of return (EIRR) of 15 percent. The EIRR of the Baiyang Port component is 20 percent, with an NPV of RMB1.2 billion. The EIRR of the logistics park component, including the Information Center, is 10 percent, with an NPV of RMB165 million. The economic viability of the project (as well as the viability of the two main components) is robust against sensitivity tests on the key assumptions of investment cost, slower demand growth, and reduction in benefits. Annex 5 provides more details of the economic analysis.

49. **Financial Analysis.** The results of financial analysis show that both Baiyang Port and Baiyang Logistics Park are financially viable; they will generate positive cash flows and will have adequate liquid assets to meet debt service obligations in most years. The table below presents the results of financial analysis of the investments in Baiyang Port and Baiyang Logistics Park. The results of sensitivity analysis show that in the absence of the IBRD loan and on the basis of commercial financing alone the investments in Baiyang Port and Baiyang Logistics Park will not be financially viable. In other words, the World Bank financing will contribute to making investments in Baiyang Port and Baiyang Logistics Park financially viable. See Annex 7 for more details on the financial analysis. In addition to financing, the Bank will support capacity building and technical assistance programs to ensure the proposed Project's long-term commercial success and financial sustainability.

	Baiyang Port		Baiyang Logistics Park	
	Project IRR (%)	Project NPV (RMB million)	Project IRR (%)	Project NPV (RMB million)
Financed through IBRD and domestic loans	8.2	24.54	8.1	11.42
Financed through domestic loans (no IBRD loan)	7.9	(15.93)	7.8	(39.81)

B. Technical

50. Feasibility studies have been commissioned by the authorities to forecast demand for the Port and the Logistics Park, as well as plan for their technical design.

51. **Baiyang Logistics Park.** Freight flows of Yichang overall, as well as the proportion that is likely to utilize logistics parks, were forecast using historical statistics and analyzing future trends. The gravity model, which incorporated factors including distance to the various logistics parks and quality of the logistics parks, projected that the Baiyang Logistics Park would attract 17.5 percent of Yichang's freight volume. It is forecast to dominate logistics flows to Zhijiang and Yidu, southeast of central Yichang, as it is the closest park to these areas. The Baiyang Logistics Park will only manage to achieve a small share of the central Yichang market and very little of the northern markets of Zigui, Dangyang and Yuan'an. It has a reasonable share of the

external markets, helped by its proximity to both Baiyang Port and the rail network and their much cheaper transport costs for longer-distance flows.

52. The three significant logistics parks currently in Yichang (Three Gorges, Aiben and Diteng) handle about 7.5 million tons per annum between them. Three additional logistics parks under construction (Honghuatao, Maoping and Yuan'an) are located either further away from Yichang or are on the opposite side of the Yangtze River. In practice Baiyang Logistics Park (BLP) would be competing with Three Gorges and Aiben, which are located in central Yichang. Three Gorges Logistics Park, the closest competitor to Baiyang, is already full. Further, the Three Gorges Logistics Park and the two other existing parks are not located at multimodal transport hubs and are utilized more as wholesale trade centers, while the proposed Project is located at a multimodal transport node. The Baiyang Industrial Park is likely to utilize the Baiyang Port and Logistics Park mainly due to its close proximity and advantages of multimodal transport modes.

53. **Baiyang Port.** The Baiyang Port's throughput will be influenced to some extent by the overall growth of the port. However, the most important factors will be the reassignment of freight from the central city wharves and the growth of the Baiyang Industrial Park (BIP) adjacent to the Port and Logistics Park. The major cargo demands at the port include the export of products from BIP and surrounding areas, as well as the import of raw materials and components for the BIP industries. The major traffic in the short to medium term includes stone, gravel, and phosphate ore to be transferred from their current facilities in the Central Port area, as well as minerals (including clay, silica sand for glass-making and limestone), industrial products (including steel and equipment) and some miscellaneous traffic.

54. In addition to some cross-dam container traffic and transshipment traffic to and from the north-west, the Port will also handle the growing containerized cargo to and from the BIP. Container traffic growth in recent years has been around 20 percent per annum and by 2025 the container throughput of Yichang City is expected to reach half to one million TEU. The current facility at the existing Yunchi Container Port has very limited container storage facilities and shippers are keen to transfer at least part of their volume to Baiyang. Based on discussions with these shippers, the container throughput of Baiyang is forecast to be 0.13 million TEU by 2020 and 0.2 million TEU by 2030, increasing to 0.6 million TEU by 2035. About 15 percent of this is expected to be transshipment traffic to and from the northwest. In addition, by 2035 about 0.5 million TEU cross-dam transfers (about 10 percent of the total being transferred) are expected.

55. **Operations.** Operations of the Port and the Logistics Park will adopt the practice of successful examples in seeking experienced operators for future day-to-day operation, with the government playing the role of facilitator and regulator.

56. **Facilities.** Facilities at Baiyang Port and the Logistics Park have been designed based on the forecast demand of 2025, with due consideration to the initial ramp-up period. An integrated design approach has been adopted to treat the Baiyang Port and the Logistics Park as a whole, and some of the yards and warehouses are flexible for use by businesses either in the Port or the Logistics Park. Berths at Baiyang Port take into account various cargo types and include bulk berths, multi-functional berths and container berths. The layout of the Logistics Park reflects the

proposed main businesses, and the transport infrastructure takes into account the multiple transport modes utilized by the project. A traffic impact study confirmed that the highway infrastructure network would be able to accommodate the increased truck traffic. An overpass has been designed to provide a direct path of 675 meters from the project site to the Ziyun Railway Marshalling Yard to facilitate multimodal shipment. The design of the information technology system (including the CCTV System, Global Positioning System, Intelligent Parking System, and Intelligent Warehouse System) will facilitate future efficient operation. The IT system will also provide an information sharing platform, a logistics marketplace to allow operators to share information and optimize the use of existing freight capacity, and published data for market analysis.

57. **Climate Change.** The design takes into account mitigation and adaptation measures for climate change. Most operations will be powered by electricity from the Three Gorges Dam. Operational arrangements will be established to ensure that trucks using project facilities will comply with national emission standards; most trucks will be equipped with diesel particulate filters. Multimodal transport facilities provided by the project will facilitate mode shifts from trucks to railways and waterways. The freight information sharing platform will facilitate matching of demand and supply, improve trucking efficiency, and lower the empty-running ratio. Project design also includes an enhanced drainage system as an adaptation measure.

C. Financial Management

58. The Project Management Office (PMO) established under Yichang Municipality will be responsible for overall project management and coordination. Yichang Transport Investment Company (YTIC), the PIU, will be responsible for day-to-day financial management work. A financial management (FM) capacity assessment of the PMO and PIU identified the principal FM risk to be the FM staff's lack of experience in Bank operations. A Financial Management Manual (FMM) acceptable to the Bank has been prepared and issued to standardize project FM procedures. In addition to extensive FM training from the Bank, Hubei Province Finance Department (HPFD, which has experience with Bank-financed operations) will arrange more extensive workshops and other experience-sharing opportunities. With implementation of the proposed actions, the FM arrangements will satisfy the Bank's requirements under OP/BP 10.00. See Annex 3 for additional information.

D. Procurement

59. The PIU, which will be responsible for the day-to-day procurement activities under the oversight of the PMO, has no prior experience of implementing Bank financed projects. The procurement capacity assessment of the PIU and PMO identified the following key risks: (i) the PMO and PIU's lack of prior experience in implementing Bank financed operations; and (ii) possible misunderstanding in processing procurement due to differences between the domestic and the Bank's procurement policies and procedures, resulting in delays and non-compliance. These risks have been mitigated by: (i) hiring an experienced Procurement Agent; (ii) training of PIU and PMO staff; and (iii) preparing a Procurement Management Manual acceptable to the Bank.

E. Social (including Safeguards)

60. **Land Acquisition and Resettlement.** The key adverse social impacts of the project are: permanent land acquisition of over 2,100 mu of collective-owned land, which will affect 463 households (1,616 persons), of which 252 households (911 persons) will need to be physically displaced; and relocation of six small enterprises and units. A Resettlement Action Plan (RAP) that complies with relevant local laws and regulations, as well as Bank policy on Involuntary Resettlement (OP 4.12), has been prepared to address these impacts. The RAP provides details of resettlement policy, procedures and requirements, including compensation rates, mitigation measures to restore incomes, institutional and monitoring arrangements, resettlement budget, and fund flows (See Annex 3).

61. **Citizen Engagement.** The project conducted a census and a social survey, and carried out social impact analysis and public consultation. These contributed significantly to the project design and the preparation of the RAP. Villagers and farmer groups were consulted and involved in the resettlement planning process and project preparation. The consultation concluded that the planned measures in the RAP were adequate to mitigate project impacts on land acquisition and resettlement. The RAP was disclosed in a local newspaper on March 31, 2016 and January 25, 2017, and was uploaded to the website of the project entity. The RAP was also disclosed at the World Bank InfoShop on January 23, 2017.

62. The RAP includes multi-level arrangements for registering and addressing grievances and complaints from project-affected people. A designated person at each level of government will be assigned to receive and record each complaint.

63. **Labor Influx.** During the 5-year construction period, there will be on average 200 construction workers on site. At peak construction period, there will be approximately 800 construction workers. It is estimated that 90 percent of the workers will come from areas outside of Yichang. To mitigate risks associated with construction labor, the PMO has prepared a construction management plan, which includes codes of conduct to be included in all construction contracts. Regular monitoring and inspection will be carried out by independent environment monitoring consultants as outlined in the environment monitoring TOR. The grievance redress system will be in place to promptly handle complaints from affected individuals and communities, including associated impact from labor influx. In addition, China's construction labor management guidelines, which require construction companies to register outside labor with local authorities and comply with local regulations including social and environment regulations, will be applied to further mitigate potential risks.

64. **Gender.** Approximately 50 percent of the residential population affected by the project are women whose livelihoods depend on farmland production. The RAP incorporates gender-responsive measures, including quantitative and qualitative instruments through the implementation of gender-disaggregated surveys and gender focus groups, to reflect gender considerations in the design and evaluation of the project. Priority will be given to women and other vulnerable groups in skills training and employment opportunities under the project. An employment training program will be established to provide skills training and job placement services for affected women.

F. Environment (including Safeguards)

65. The main impacts of the project during construction include the river environment, wastewater discharge, vegetation loss, off-site impacts from borrow and disposal pits on water and soil erosion, noise and dust, health risks for workers and communities, and safety risks of river front civil work. The port structure only occupies about 10 meters, compared to the river cross section of about 1,200 meters. The radius of impacts caused by water-front civil works is estimated to be less than 10 percent of the river cross section. Therefore, impacts during construction on aquatic ecology and species are limited. However, operation of the port and the logistics park will draw more vessels and increase water traffic on the river segment. Potential impacts associated with operations include impacts on river hydrology, aquatic ecology, fisheries, navigation safety, ship waste management, risks of safety and contamination during loading, fire risks related to ships and resulting oil leakage, wastewater discharge, solid wastes, noise and air emissions, impacts induced by increased traffic once the project is completed, and the cumulative impacts of past, present and future development along the river in the vicinity of the Yichang Port Hub. Given the nature and scale of the project and the sensitivity of impacts and risks involved due to its location, the project has been assigned the Bank's Environmental Category A.

66. **Environmental Assessment (OP 4.01).** In line with the requirements of Bank's safeguard policies and relevant domestic regulations, an Environmental Assessment (EA) was prepared. The EA, with an additional chapter on social assessment, forms the ESIA. An Environmental and Social Management Plan (ESMP) was developed with general mitigation measures (e.g., Environmental Codes of Practice for construction) as well as site-specific measures, taking into account the Bank Group Environmental, Health and Safety (EHS) Guidelines for Shipping and EHS Guidelines for Ports, Harbors and Terminals. A more detailed summary of the ESIA and the ESMP is in Annex 3.

67. Cumulative impacts of all development activities in the past, present and foreseeable future on selected valuable ecological components (VECs) have been evaluated as part of the EA. The approach follows international good practice, as exemplified in the six-step methodology of the IFC good practice handbook. The VECs were selected through public consultations and expert discussions. The cumulative impacts of all development activities on two VECs, Chinese sturgeon and water quality of the river concerned, are expected to be within the ecologically safe threshold. However, the VEC of the river shoreline under Yichang's jurisdiction is already over-developed. To address this issue, Yichang city plans to consolidate the functions of ports by phasing out some ports in the downtown area and replacing them partly by new ports, including the proposed Baiyang Port.

68. Yichang has already started closing down illegal sand farming and wharfs along the river. Yichang's plan to shut down illegal sand farming and wharfs along the river and replace the handling of sand partly by the proposed Baiyang Port will induce both positive and negative impacts. Unplanned and over withdrawal of river sand may erode the river banks and bed, affecting flood control capacity, damage riparian vegetation, and alter turbidity and the hydro-dynamics of the river; this, in turn, often deteriorates the riverine and aquatic eco-systems. However, shutting down illegal but long existing sand farming can have negative social impacts,

such as job loss of workers. The proposed capacity building activities include project management support to assess and mitigate these risks and impacts.

69. **Natural Habitats OP 4.04.** The development of the Baiyang Port will have the potential to create negative impacts on natural habitats as the project site is within the outer protective zone of a provincial natural reserve for Chinese sturgeon, an endangered migrating species. Relevant site-specific mitigation measures and monitoring requirements have been included in the ESMP, including limiting water front civil works to certain months, in order to minimize disturbance to the migration route of protected species; providing funding to the nature reserve in its on-going effort to artificially reproduce the Chinese sturgeon and other protected species; and carrying out a study to establish the ecological threshold for the natural shoreline in Yichang, and the mechanism for its enforcement.

70. **Public disclosure and consultation.** Two rounds of public consultations were conducted during EA preparation and the relevant documents were disclosed as per Bank requirements for a Category A project. In the first round, project information and an outline of potential impacts and the EA work was disclosed on the notice boards of affected communities in Yichang and the official website of Hubei Provincial Environmental Protection Bureau. In the second round, an announcement at the major local newspaper in Yichang solicited public opinion on the full draft EA/EMP that was being disclosed at the official website of the PMO. Public consultations were carried out after each round, using a combination of questionnaire survey, expert consultation, and public meetings. In all, about 200 people (with a good balance of age, professions, and gender) were surveyed and more than ten relevant organizations (including affected villages, towns, enterprises, and concerned government agencies) were consulted. Concerns expressed and suggestions made have been incorporated in the final reports. The English version of the ESIA and the ESMP were disclosed in the InfoShop on January 24, 2017.

G. World Bank Grievance Redress

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

Annex 1: Results Framework and Monitoring

CHINA: THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT (P153473)

Project Development Objectives

The PDO is to improve freight transport and logistics services in Yichang.

These results are at Project Level

Project Development Objective Indicators

Indicator Name	Baseline (2016)	Target Values					
		FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
1. Throughput in the Baiyang Port (13 berths) (tons)	0	500,000	2,410,000	3,420,000	5,130,000	6,830,000	7,630,000
2. Percentage of container throughput in the Baiyang Port (%)	0	15	20	25	30	35	40
3. Empty-running rates of freight trucks in/out of Baiyang Logistics Park (%)	45	45	45	45	45	ITS system operational	40
4. Businesses in the Baiyang logistics park that use the project funded information system (%)	0	0	0	0	0	ITS system completion	50

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values					
		FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
Component 1: Baiyang Port and Operations Area							
1. Number of berths constructed	0	0	4	4	7	7	7

Component 2: Baiyang Logistics Park							
2. Area of warehouses constructed (000 m ²)	0	15.0	34.4	47.4	47.4	64.0	64.0
3. Area of cargo yards paved (000 m ²)	0	9.6	63.0	63.0	93.0	123.0	156.1
4. Number of businesses signing up to rent in the park	0	0	0	0	10	20	25
Component 3: Transport Connection Infrastructure							
5. Kilometers of new urban roads constructed	0	2.0	2.5	2.5	2.5	2.5	2.5
Component 4: Baiyang Logistics Information Platform and Facilities							
6. Number of the sub-functions of the ITS platform in operation	0	0	0	1	9	15	15
Component 5: Capacity Building							
7. Plan for developing Yichang as a key transport and logistics hub in the proposed Yichang-Europe land-to-waterway freight corridor satisfactorily completed (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes
8. Baiyang Port & Logistics Park Operation Study satisfactorily completed (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes
9. Resettlement External Monitoring carried out annually (Yes/No)	No	Yes	Yes	Yes	Yes	Yes	Yes

10. Study Tours (Times)	0	3	8	13	16	16	16
11. Staff trained (Person-days)	0	1000	1200	1400	1600	1800	2000
–of which, female staff trained (Percentage)	0	90	90	90	90	90	90

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
1. Throughput in the Baiyang Port (13 berths) (tons)	The total of inbound and outbound freight tonnage handled by the Baiyang Port. This indicator measures the freight transport improvement aspect of the PDO.	Annually	The PMO will record inbound and outbound freight tonnage handled daily by operational berths, whose number will increase from six initially to 13 as construction of the seven berths financed by the proposed Project is completed and operations commence. The monthly throughput data will be summarized and reported. The annual throughput will be the sum of the monthly throughput of the previous 12 months.	PMO
2. Percentage of container throughput in the Baiyang Port (%)	The total of inbound and outbound container freight tonnage divided by throughput tonnage in Baiyang Port. This indicator measures the freight transport efficiency improvement aspect of the	Annually	The PMO will record the inbound and outbound container freight tonnage handled daily by operational berths, whose number will increase from six initially to 13 as construction of the	PMO

	PDO.		seven berths financed by the proposed Project is completed and operations commence. The monthly container throughput data will be summarized and reported. The annual percentage of container throughput will be the sum of the monthly container throughput of the previous 12 months divided by the sum of monthly throughput of the previous 12 months.	
3. Empty-running rates of freight trucks in the Baiyang Logistics Park (%)	One minus the total freight tonnage carried by trucks in and out of the Baiyang Logistics Park divided by the total capacity of truck tonnage in and out of Baiyang Logistics Park. The baseline is measured through a three-day survey of trucks in and out of two comparable (type of freight, logistics park size and logistics park location close to the expressway) logistics parks in Yichang. This indicator measures the freight transport efficiency aspect of the PDO.	Annually	The PMO will collect truck and freight data at the gate of the Baiyang Logistics Park in the months of March, June, September and December for three consecutive non-holiday weekdays of the month. Data will be collected between the hours of 7 a.m. to 7 p.m. The value reported annually will be the average of the four values calculated for the previous 12 months.	PMO
4. Businesses in the Baiyang Logistics Park that use the project funded information system (%)	The number of businesses in the Baiyang Logistics Park that use the information system divided by the total number of businesses in the Baiyang Logistics Park. This indicator measures the logistics service improvement aspect of the PDO.	Annually	The PMO will collect data on the number of businesses that use the information system and the total number of businesses in the Baiyang Logistics Part as of the first day of each month. The value reported annually will be the average of the 12 values for the previous 12 months.	PMO

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Component 1: Baiyang Port and Operation Area				
1. Number of berths constructed	The number of berths for which construction has been completed and the berths are in operation or are ready for operation.	Annually	The PMO will monitor the number of berths that are in operation or are ready for operation.	PMO
Component 2: Baiyang Logistics Park				
2. Area of warehouses constructed (000 m ²)	The total area (in thousands of square meters) of warehouses for which construction has been completed and the warehouses are in operation or are ready for operation.	Annually	The PMO will monitor the number of warehouses that are in operation or are ready for operation.	PMO
3. Area of cargo yards paved (000 m ²)	The total area (in thousands of square meters) of cargo yards which have been paved.	Annually	The PMO will monitor the area of cargo yards paved.	PMO
4. Number of businesses signing up to rent in the park	The number of businesses signed up to rent in the Baiyang Logistics Park.	Annually	The PMO will collect data on the number of businesses that signed up to rent in the Baiyang Logistics Park as of the first day of each month. The value reported annually will be the total of the 12 values collected in the previous 12 months.	PMO
Component 3: Transport Connection Infrastructure Construction				
5. Kilometers of new urban	The total kilometers of new urban roads	Annually	The PMO will monitor the	PMO

roads constructed	for which construction has been completed and the roads are open or are ready for traffic.		kilometers of new roads that are open or are ready for traffic.	
Component 4: Baiyang Logistics Information Platform and Facilities				
6. Number of the sub-functions of the ITS platform in operation	The number of sub-functions of the ITS platform that are in operation.	Annually	The PMO will monitor The number of sub-functions of the ITS platform that are in operation.	PMO
Component 5: Capacity Building				
7. Plan for developing Yichang as a key transport and logistics hub in the proposed Yichang-Europe land-to-waterway freight corridor satisfactorily completed (Yes/No)	Satisfactory completion of a plan for developing Yichang as a key transport and logistics hub in the proposed Yichang-Europe land-to-waterway freight corridor.	Annually	The PMO and Bank will jointly monitor the plan development.	PMO
8. Baiyang Port & Logistics Park Business Plan satisfactorily completed (Yes/No)	Satisfactory completion of a detailed business plan, which will include, at a minimum, market assessment, calculation of generalized logistics cost, competitor analysis, value proposition, and operation model recommendations.	Annually	The PMO and Bank will jointly monitor the plan development.	PMO
9. Resettlement External Monitoring carried out annually (Yes/No)	External independent monitoring of resettlement implementation.	Annually	The independent monitor will issue annual resettlement monitoring reports.	PMO
10. Study Tours (Times)	The number of study tours undertaken.	Annually	The PMO will submit study tour reports to the Bank.	PMO
11. Staff trained (Person-days)	The number of staff trained in person-days.	Annually	The PMO will record the number of staff trained in person-days.	PMO

-of which, female staff trained (Percentage)	Number of female staff trained divided by number of total female staff .	Annually	The PMO will record the number of female staff trained.	PMO
--	--	----------	---	-----

Annex 2: Detailed Project Description

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

1. The Baiyang Port and the Logistics Park to be developed under the proposed project are located in Baiyang District in Yichang Municipality, 40 km south from downtown Yichang, and 70 km downstream of the Three Gorges Dam. The location is ideal in that it is removed from the main urban transport corridors and hence will not add to the central city's congestion and related air pollution; however, it is close enough to serve the growing demand for urban freight logistics in Yichang Municipality. The proposed site is also well connected to all modes of transport, including the national expressway system, nearby Ziyun Railway Marshalling Yard, and the Three Gorges Airport.

2. The Project will be implemented in a phased manner to provide flexibility to customize the facilities based on the needs of tenants and operators. Construction of specialized facilities and purchase of specialty equipment, which are more expensive but high value-added, will be carried out during Years 4 and 5, after demand for specialized facilities and equipment is clearly articulated and defined in the business plan (to be completed in Years 1 to 3). The business plan, based on extensive market research and analysis, will clearly define the Project's mission and value proposition, and provide recommendations of operation models. Extensive inputs from logistics value chain stakeholders will be collected and analyzed. The Project's role in optimizing supply chain services will be clearly defined. Anchor tenants and strategic partners will be identified and evaluated in the marketing plan, which will be a part of the business plan.

3. Capital investment decisions on approximately 20 percent of the logistics park and six percent of the port will be made in Year 4 and will be carried out during Years 4 and 5. For the port, the phased approach mainly applies to specialty equipment purchase. The phased approach in project implementation is illustrated in Figure 1.

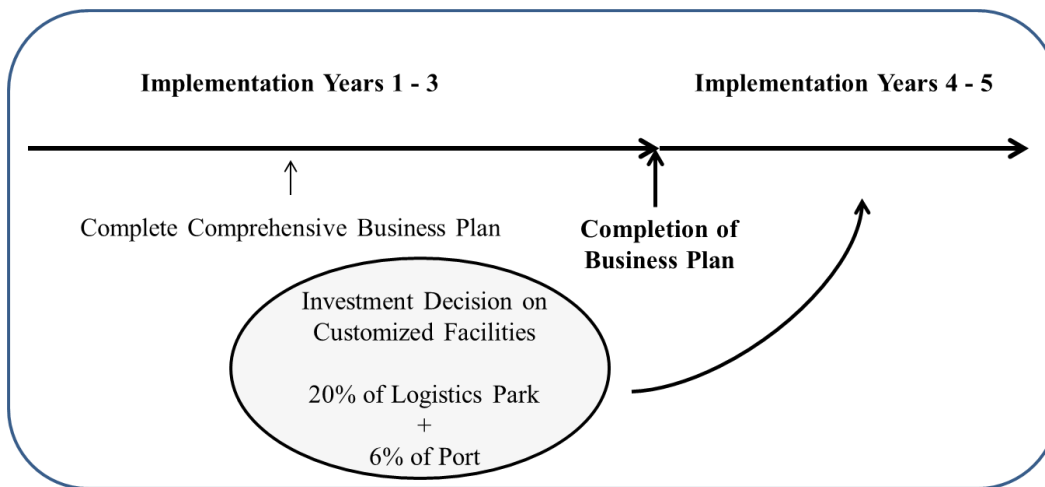


Figure 1: Phased Implementation

4. The project layout is illustrated in Figure 2.

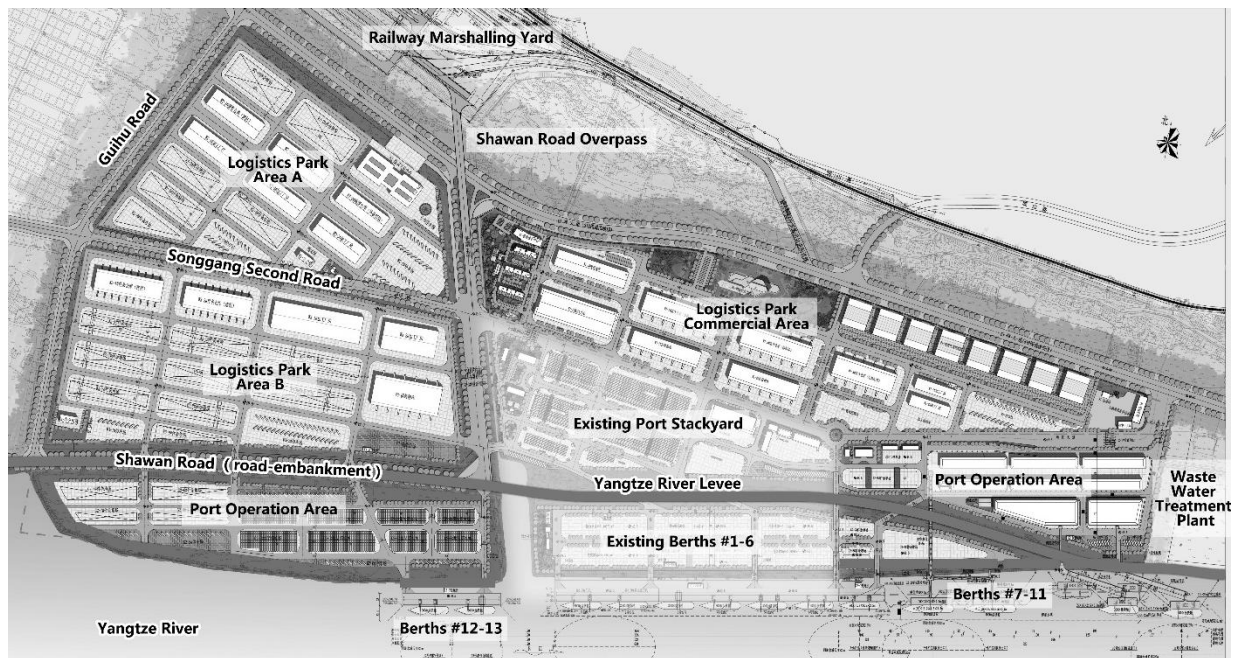


Figure 2: Project Layout

5. **Component 1: Baiyang Port and Operations Area (total cost US\$123.21 million, IBRD loan US\$71.18 million, 29% of project cost).** This component will finance the construction of port facilities, purchase and installation of loading and unloading equipment, and associated supporting facilities and equipment. Port facilities and equipment include:

(a) **Seven Berths** (berths 7 to 13) designed to handle 3,000 ton DWT vessels, including: (i) three container capable berths - a general and heavy cargo berth, a multi-use berth, and a general cargo berth; and (ii) four bulk cargo berths - two inbound ramp berths, and two outbound floating berths.

(b) **Loading, Unloading and Transport Equipment**, including: (i) for the three container capable berths - a quayside crane, two gantry cranes, and a fleet of eight tractors, 16 trailers, four container tractors, and eight semi-trailers; (ii) for the four bulk cargo berths - two orbit ship loaders, four floating cranes, 1,600 meters of belt conveyor, two electric hoists, four bucket mouth funnels, and 45 mobile 15-meter belt conveyors; (iii) for the stockyard - eight container straddle carriers, two rail gantry cranes, 12 tire cranes, 12 bucket mouth funnels, 300-meter belt conveyor, 14 fixed access hoppers, four dump trucks, and six electric truck scales; and (iv) specialty equipment to be purchased in the late stage of implementation.

(c) **Supporting Infrastructure**, including two bulk cargo yards, a general cargo yard, a container yard, two parking lots, an administration building, a mechanical shop, a tools and materials room, substations, and utilities.

6. Construction of six berths (berths 1 to 6) was completed in the fall of 2016. After completion of testing and commissioning, operation started in March 2017. Although these six berths are not financed by the proposed Project, they are an integral part of the new Baiyang Port. When the proposed project is completed in 2022, there will be a total of 13 berths in operation.

7. **Component 2: Baiyang Logistics Park (total cost US\$252.37 million, IBRD loan US\$92.99 million, 60% of project cost).** This component will finance the construction of three logistics service areas and the purchase and installation of basic equipment in the park:

(a) **Commercial Area** will focus on (i) urban distribution and logistics services associated with small-size consumer goods that require quick turnaround; (ii) value-added services for containers; and (iii) general services and administration. This area will include an urban distribution center, several warehouses and processing centers for consumer goods, pick-and-pack container facilities, a service and maintenance area for vehicles and containers, a business administration building where the information center will be located, parking, and lodging facilities for staff and drivers.

(b) **Area A** will focus on logistics services for large-size general cargo. This area will include stockpile yards, warehouses and processing facilities, an administration building, and parking;

(c) **Area B** will focus on container logistics services for bulk cargo. This area will include stockpile yards, container yards, pick-and-pack container facilities, warehouses and container processing facilities, and parking.

8. The logistics park will support 3PL companies serving Yichang Municipality as well as manufacturers and enterprises located inside the Baiyang Industrial Park. The functions of the three service areas are summarized in the table below.

Logistics Park	Functional Design	Type of Goods
Commercial Area	<ol style="list-style-type: none"> 1. Urban distribution centers 2. Warehouses 3. Container yard 4. Container pick-and-pack facilities 5. Processing centers 6. Trading and distribution centers 7. Logistics park management center (banks, postal service, insurance, commerce agency office, tax office, custom and inspection, and others) 8. Logistics information center 9. Supporting facilities, including vehicle and equipment maintenance facility 	Small-size goods with quick turnaround

Area A	1. Stock yard 2. Warehouses 3. Processing centers 4. Administrative building	Large-size general cargo
Area B	1. Stock yard 2. Container yard 3. Container pick-and-pack facility 4. Warehouse 5. Processing center	Containerized cargo

9. **Component 3: Transport Connection Infrastructure (total cost US\$34.25 million, IBRD loan US\$24.50 million, 8% of project cost).** This component will finance: (i) an overpass road connecting Baiyang Port and the Logistics Park to Ziyun Railway’s Shawan Marshalling Yard; (ii) surrounding roads and underground utilities (power, water, drainage, etc.), including Guihu Road and Songgang Second Road; and (iii) traffic signals, intersection channelization, and other traffic management facilities.

10. **Component 4: Baiyang Logistics Information Platform and Facilities (total cost US\$11.09 million, IBRD loan US\$7.88 million, 3% of project cost).** This component will finance the following activities: (i) computer hardware and equipment purchase and installation in the information center; (ii) an information platform; and (iii) a business application system. The information platform will collect data and information at various points of the logistics service value chain, while the business application system will conduct big data analysis and provide key information for decision making to users, logistics service providers and enterprises looking to outsource supply chain management.

11. The primary functions of the information center are: (i) inventory management; (ii) vehicle fleet dispatch and location tracking; (iii) urban distribution management; and (iv) information service to logistics service providers and private enterprises. The secondary function of the information center is to manage commercial activities in the logistics park, e.g., maintain a registry of enterprises and associated staff, manage the security system (such as the CCTV network), and monitor and manage parking.

12. **Component 5: Capacity Building (total cost US\$2.95 million, IBRD loan US\$2.95 million, 1% of project cost).** This component will finance the provision of: (a) technical assistance support for, *inter alia*: (i) the preparation of a detailed business plan, under terms and conditions acceptable to the Bank, for the development and undertaking of transparent and competitive selection guidelines and processes for service contractors, joint venture partners, and/or public-private partnership concessionaires; (ii) the preparation of plans and/or studies related to the development of Yichang as a key transport and logistics hub; (iii) the development and application of building information management technology in project life-cycle management; (b) training activities on logistics, and associated study tours; and (c) Project management activities.

13. This component will: (i) provide important technical assistance to ensure commercial success and financial sustainability of Yichang's first greenfield integrated multimodal transport and logistics hub; (ii) offer the PMO and PIU capacity building trainings in project implementation, operations, and management; and (iii) support safeguard monitoring services for resettlement activities and environment management.

Annex 3: Implementation Arrangements

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

Project Institutional and Implementation Arrangements

1. Yichang Municipal Government (YMG) has set up a Project Leading Group (PLG), a Project Management Office (PMO) and a Project Implementation Unit (PIU):
 - a) The PLG, headed by the First Deputy Mayor, will be responsible for guiding overall project implementation. It includes leaders of relevant agencies, such as the Three Gorges Port Authority, Municipal DRC, Municipal Finance Bureau, Municipal Environmental Protection Agency, and Municipal Planning Bureau.
 - b) The PMO, housed in the Three Gorges Port Authority (TGPA), will be responsible for coordination among different government agencies and supervision of the PIU, as well as communication with the Bank. TGPA, established in 2014, is responsible for regulatory approvals of ports and associated infrastructure planning, development, operation and management. The Deputy Commissioner of the TGPA will chair the PMO, with the Deputy Director Generals of the Municipal DRC, Municipal Finance Bureau, and Municipal Transport Bureau, as well as the Chairman of Yichang Transport Investment Co., Ltd (YTIC) as members.
 - c) YTIC will be the PIU and will be responsible for detailed project implementation, including project procurement and financial management. YTIC is an SOE established in 2003. YTIC is entrusted by YMG to develop, finance, operate and manage ports and associated infrastructure in Yichang. At present YTIC is developing the new Maoping Port upstream from the Three Gorges Dam, which is designed to be a major transshipment port for traffic bypassing the dam. In addition, YTIC has a minority ownership in the existing Yunchi Container Port.

Financial Management, Disbursements and Procurement

Financial Management

2. YTIC has assigned a financial manager and an accountant for project financial management (FM) work. The FM capacity assessment concluded that the Project FM arrangements satisfy Bank requirements and identified the principle FM risk to be the project financial staff's lack of experience with Bank operations. An FM manual (FMM) has been issued to standardize project FM procedures, including coordination and reporting. In addition to extensive FM training from the Bank, Hubei Provincial Finance Department (HPFD) (which has experience with Bank-financed operations) will organize more extensive workshops and other experience sharing opportunities. The residual project FM risk after mitigation is assessed as Moderate.

3. **Budgeting.** YTIC will prepare the annual project implementation plan, including funding sources and budget, which will be reviewed by the PMO. Counterpart funds for the project will be from the municipal government budget and loans from commercial banks. The budget for counterpart funds committed by the government will be reviewed and approved by the local People's Congress and will be included in the sectoral budget. Budget variance analysis will be conducted by YTIC semi-annually and reviewed by the PMO for corrective action where necessary.

4. **Funds Flow.** Bank loan proceeds will flow from the Bank to the project's Designated Account (DA), which will be located at and managed by HPFD. HPFD will be directly responsible for the management, maintenance and reconciliation of the DA. Payment requests prepared by YTIC will go to the PMO and then to Yichang Municipal Finance Bureau for review, before going to HPFD for review and payment from the DA. HPFD will reimburse funds to YTIC (or disburse funds to contractors directly) from the DA for payment of eligible expenditures. HPFD will submit withdrawal applications to the Bank for DA replenishment or for direct payment.

5. The loan agreement will be signed between the World Bank and the People's Republic of China through the Ministry of Finance (MOF). The on-lending loan agreement will be entered into by MOF and Hubei Province Government through HPFD. HPFD will on-lend to Yichang Municipal Government (YMG) through Yichang Municipal Finance Bureau. YMG will be the final debtor of the Bank loan.

6. **Accounting and Financial Reporting.** The administration, accounting and reporting of the project will be set up in accordance with Circular #13: "Accounting Regulations for World Bank Financed Projects" issued in January 2000 by the MOF. The standard set of project financial statements has been agreed to by the Bank and MOF. YTIC will set up a separate accounting profile in its computerized accounting system to record project transactions. Interim unaudited financial reports (IFRs) will be furnished to the Bank no later than 45 days after the end of each half-year period (prior to August 15 and February 15).

7. **Internal Control.** YTIC has adequate financial management regulations in place. In addition, the project will be governed by MOF's Accounting Regulations (see above) as well as the FMM.

8. **Audit.** Hubei Provincial Audit Office (HPAO) has been identified as the auditor for the project. The annual audit report will be issued by HPAO and will be due to the World Bank within six months after the end of each calendar year. Annual audit reports will be made publicly available on the website of the provincial auditor. The Bank will also make them available to the public in accordance with the World Bank Policy on Access to Information.

Disbursements

9. Four disbursement methods will be available for the project: advance, reimbursement, direct payment, and special commitment. Supporting documents required for Bank disbursement under different disbursement methods is documented in the Disbursement Letter issued by the Bank.

10. A DA in US dollars will be opened at a commercial bank acceptable to the World Bank and will be managed by HPFD. The ceiling of the DA will be determined and documented in the Disbursement Letter.

11. The World Bank loan will be disbursed against eligible expenditures (taxes inclusive) as in the table below.

Category	IBRD Loan	
	Allocated Amount (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of taxes)
(1) Goods, works, consultant and non-consulting services, incremental operating costs, and training	199,500,000	100
(2) Front-end fee	500,000	100
(3) Interest Rate Cap or Interest Rate Collar premium	0	
Total	200,000,000	

12. The Bank loan will finance approximately 75 percent of the contracts for goods, works and non-consulting services. For the packages identified in the procurement plan to be financed by the Bank loan, the Bank loan will finance 100 percent of the estimated cost of each package. Counterpart funding of US\$246 million will finance the remaining 25 percent of contracts for goods, works and non-consulting services, plus land acquisition and resettlement. Measures, including periodic review and adjustment of the procurement plan, will be taken during project implementation by the Bank and the PMO to ensure that the above financing arrangements are carried out and both Bank loan proceeds and counterpart funds are utilized to finance the intended contracts or expenditures.

13. Retroactive financing up to US\$40 million will be available to the Project for payments made for Eligible Expenditures under the Project prior to the date of the Loan Agreement on or after December 13, 2016. The Eligible Expenditures are identified in the agreed procurement plan for goods, works and non-consulting services for the proposed Project.

Procurement

14. **Capacity Assessment.** The procurement capacity assessment identified the PMO and PIU procurement staff's lack of experience with World Bank-financed projects and the possible influence of domestic procurement practices on project implementation as the principal procurement risks. Mitigation measures include: (i) procurement under the project will be centralized at the PIU; (ii) an experienced procurement agent has been recruited based on TOR agreed by the Bank; (iii) continuous procurement training will be provided either by the Bank (or by a training institution acceptable to the Bank) during project preparation and implementation to raise awareness of the differences between domestic practices and the Bank's procurement policies and procedures; (iv) assistant with procurement planning from an external consultant hired by the PIU during project preparation; and (v) preparation of a Procurement Management Manual acceptable to the Bank. The overall procurement risk is considered Moderate.

15. **Applicable Guidelines.** Procurement will be carried out in accordance with the following documents: "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011, revised July 2014; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011, revised July 2014; and the provisions stipulated in the Loan Agreement. National competitive bidding (NCB) will be carried out in accordance with the Law on Tendering and Bidding of the People's Republic of China, promulgated by Order of the President of the People's Republic of China on August 30, 1999, subject to the modifications stipulated in the Legal Agreement in order to ensure consistency with Bank Procurement Guidelines.

16. **Procurement of Works.** Works procured under this project will include civil works under Components 1, 2, 3, and 4. Procurement will be carried out using the Bank's Standard Bidding Documents for all International Competitive Bidding (ICB) and National Model Bidding Documents agreed with or satisfactory to the Bank for all NCB.

17. **Procurement of Goods.** Goods procured under this project will include equipment and instruments under Components 1, 2, 4 and 5. Procurement will be carried out using the Bank's Standard Bidding Documents for all ICB and National Model Bidding Documents agreed with or satisfactory to the Bank for all NCB.

18. **Selection of Consultants.** Consultants will be hired for activities under the project's Capacity Building component. Selection will be conducted using the Bank's Standard Request for Proposals for all Quality- and Cost-Based Selection (QCBS) and Quality-Based Selection (QBS). Universities and government research institutions may be selected in accordance with the provisions of Sections 1.13(c) and 2.8 of the Consultant Guidelines.

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

20. **Procurement Plan.** The Procurement Plan, dated May 8, 2017 for the project was agreed with the Bank during loan negotiations. It will be made available on the project’s website and on the Bank’s external website. The Procurement Plan will be updated annually or as required to reflect implementation needs and improvements in institutional capacity.

21. **Thresholds for Prior-Review and Procurement Methods.** The thresholds for procurement methods and prior review are indicated in the table below.

Expenditure Category	Contract Value (US\$)	Procurement Method	Prior Review Threshold (US\$)
Goods and Non-Consulting Services	≥10,000,000	ICB	All contracts ≥4,000,000
	<10,000,000	NCB	
	<100,000	Shopping	
	NA	DC	
Works/ Supply & Installation of plant and equipment	≥40,000,000	ICB	All contract ≥15,000,000
	<40,000,000	NCB	
	<200,000	Shopping	
	NA	DC	
Consultants	≥ 300,000	QCBS, QBS	Firms: all contracts ≥ 2,000,000 Individuals: all contracts ≥ 400,000
	< 300,000	CQS	
	N/A	SSS	
	N/A	IC	
Remarks:	ICB –International Competitive Bidding NCB –National Competitive Bidding DC – Direct Contracting QCBS: Quality- and Cost-Based Selection ; QBS: Quality-Based Selection CQS: Selection Based on the Consultants’ Qualifications SSS: Single Source Selection; IC: Individual Consultant selection procedure NA: Not Applicable		

22. **Advance Contracting and Retroactive Financing.** Contracts expected to be signed in advance of loan signing have been identified in the agreed procurement plan for the project. Payments made under such contracts prior to the date of signature of the Loan Agreement will be eligible for retroactive financing within the limits specified in the Loan Agreement.

Social

23. The key adverse social impacts of the project are: permanent land acquisition of over 2,100 mu of collective-owned land, which will affect 463 households (1,616 persons), of which

252 households (911 persons) will need to be physically displaced; and relocation of six small enterprises and units. The resettlement impacts are summarized in the table below.

Impact of Land Acquisition and House Demolition

Affected village	Impact of House Demolition					Impact of land acquisition		
	Family households			Institutions and enterprises				
	Number of households	Number of people	Area (m ²)	Area (m ²)	Number	Number of households	Number of people	Area (mu)
Yazishan Village	33	110	124,515	0	0	192	666	418
Guixihu Village	219	801	12,553	6,019	6	271	950	1,722
Total	252	911	137,068	6,019	6	463	1616	2,140

Notes: All the households affected by house demolition are also affected by land acquisition; 705 persons from 211 households are affected by land acquisition but not by house demolition.

24. **Resettlement Action Plan (RAP).** A resettlement action plan (RAP) was prepared in accordance with Government regulations as well as Bank policy OP4.12. It describes the resettlement framework and key principles, compensation rates, livelihood rehabilitation, resettlement budget and fund flow, grievance redress mechanism, as well as the cut-off date.

25. **Public Consultation and Participation.** Public consultations and participation played a key role in formulating the RAP. Affected residents (both men and women), business people, and local governments participated in the census, the inventory, and in the formulation of the livelihood rehabilitation strategy, measures, and relocation sites. Their feedback was incorporated in the RAP. The RAP describes the consultation methodologies, key topics covered, main concerns of affected persons, and measures to address these concerns. Public consultations and participation will continue during RAP implementation. Information will be provided to affected people through TV, radio broadcasts, newspapers, bulletins and posters.

26. **Resettlement Implementation Monitoring.** Internal and external monitoring is included as part of project resettlement management. The PMO will carry out internal monitoring of resettlement implementation as detailed in the RAP. An external monitor will be selected to independently monitor RAP implementation, including compensation payments, allocation of residential sites, farm land allocation, restoration of infrastructure, public consultation process, grievance redress, and restoration of livelihoods of affected farmers. The internal monitoring report will be prepared quarterly and the external monitoring report will be prepared bi-annually.

Environment

27. **The Environmental Assessment (EA)** was carried out in accordance with both domestic policies and World Bank policies OP 4.01 (Environmental Assessment) and OP4.04 (Natural Habitats). The EA covers both construction and operation periods and includes cumulative and induced impacts. Social impacts were assessed and added to the EA to form the Environmental and Social Impact Assessment (ESIA).

28. Impacts during construction mainly include noise and dust, wastewater discharge, vegetation loss, solid wastes, labor influx and related health risks and social disturbance, and off-site impacts from borrow and disposal pits on water and soil erosion. These impacts will be mitigated through the review of the detailed design and contractors' construction organization plans, as well as strict site inspection by supervisors and the PMO/PIU. Impacts during operation include air pollution, noise, sewage and solid wastes from the port and the logistics park, including pollution and wastes from ships, and their impacts on river hydrology, water quality, natural habitat and fisheries, and navigation safety.

29. **The Cumulative Impacts Analysis (CIA)** focused on three valuable ecological components (VECs), i.e., Chinese sturgeon, water quality and the natural shoreline of the Yichang segment of Yangtze River. The scope of the CIA covers the entire Yichang navigation hub, consisting of the series of ports, of which the proposed project is the latest one. The CIA indicates that the cumulative impacts of development activities on the Chinese sturgeon and on water quality are expected to be within the ecologically safe threshold. However, the current shoreline of the river segment concerned is over-developed. To address the issue, Yichang plans to consolidate port functions by phasing out some ports in the downtown area and replacing them with new ports, including the Baiyang Port.

30. Yichang has already started shutting down illegal sand farming and wharfs along the river. Yichang's plans to shut down illegal sand farming and wharfs along the river and replace the handling of sand partly by the proposed Baiyang Port will induce both positive and negative impacts. Unplanned and over withdrawal of river sand may erode the river bank/bed, affect flood control capacity, damage riparian vegetation, and alter turbidity and the hydro-dynamics of the river, which could deteriorate the riverine and aquatic eco-systems. However, shutting down illegal but long-existing sand farming can have negative impacts on the jobs and livelihoods of workers. The project includes technical assistance to assess and address these risks and impacts. The ESIA shows that fisheries accounts only for 1-2 percent of GDP in Yichang and is predominantly (almost 90 percent) aqua-culture. In the project's area of influence, the share of fisheries is almost negligible, with most locals engaged in farming and orchards for their livelihoods. Therefore, the project will not impact fisheries, but will impact farming (which is addressed as part of social assessment).

31. Environmental and safety risks for commercial river ports in this part of China are mainly port and vessel related. For port operation, risks include sinking or capsizing due to unbalanced loads, injuries to workers, and fires and explosions caused by burning substandard fuel. For vessels, the most common risks are being stranded and/or collisions, followed by fire risks

caused by aging electricity circuits, substandard machinery oil or inferior material. The main consequence of the above is oil leakage, which is the focus of the risk assessment and preventive measures. A Safety Assessment Report was prepared focusing on risks during construction, such as lightning, sand storms, and floods, as well as risks associated with civil works and workers' safety during construction.

32. **Alternative Analysis** during the EA played a key role in optimizing the project scope and design. Available technologies in China for managing wastewater and solid wastes from vessels were analyzed and compared with international good practice embodied in the applicable EHS Guidelines. Different options for handling solid wastes on land (in the port and in the logistics park) were also considered. Different loading technologies for bulk goods were compared and those with the least dust and exhaust emissions were chosen. Overall, the selected options are environmentally sound, economically viable, and are well adapted to local conditions.

33. Linked activities as defined by OP4.12 include Phase I of Baiyang Port (six berths and associated warehouses) and re-routing of about three kilometers of G318 national highway between the project site and the nearby expressway. Due diligence reviews confirm that these activities have proper domestic EAs that largely meet the Bank's criteria.

34. **An Environmental and Social Management Plan (ESMP)** was developed to effectively address the negative impacts and risks. It prescribes common mitigation measures, especially during construction, and site-specific measures for water front construction and port operation that take into account applicable Bank Group EHS Guidelines. An Environmental Code of Practice (ECOP) for construction was developed as part of the proposed Project's standard code of conduct. Measures from the Safety Assessment Report are also included in the ESMP. In addition, an emergency preparedness and response plan has been adopted to deal with major environmental risks of oil leakage.

35. The ESMP outlines the institutional arrangements and the responsibility of each party (the PMO, the PIU, contractors, engineering supervisors, external monitors, monitoring agencies, etc.) during implementation, with the PMO being assigned overall responsibility for ensuring ESMP implementation. The ESMP includes a detailed environmental monitoring plan for the construction and operational phases, which provides details of parameters to be monitored, their location, and monitoring frequency, in addition to a potential monitoring agency and budget estimates. A budgeted training plan has been developed, in particular for operators. The ESMP also includes a grievance redress mechanism and EA procedures for changes arising during implementation to ensure that appropriate actions are taken in response to complaints and changes.

Annex 4: Implementation Support Plan

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

Strategy and Approach for Implementation Support

1. The strategy for the implementation support plan has been developed based on the risk assessment through the SORT process. Close monitoring and mentoring will be necessary during implementation to mitigate the risks of “institutional capacity for implementation and sustainability”, and “environment and social”, which are rated substantial. In addition, Bank implementation support will also focus on compliance with Bank fiduciary requirements.

2. **Institutional capacity for implementation and sustainability.** Yichang Transport Investment Company (YTIC) lacks experience with Bank financed projects. During project preparation, YTIC staff received initial training on Bank financial management and procurement requirements. During implementation, additional training and support will be provided to YTIC staff in project accounting, financial reporting, and procurement management. Bank implementation support will focus on ensuring technical assistance in the areas of project management, business plan development, and market promotion to ensure sustainable operations, are effective.

3. **Environment and social.** To mitigate environmental and social risks, long-term monitoring and evaluation will be implemented. For resettlement activities, internal and external monitoring will be carried out to review physical progress, public consultation process, grievance redressal mechanism, and livelihood restoration. Environmental monitoring will be carried out during construction and operation. Bank implementation support will focus on compliance with Bank safeguard requirements through the satisfactory implementation of the Environmental Management Plan and the RAP. The Bank will review the monitoring reports, carry out site visits to assess compliance, and discuss and resolve issues identified with the appropriate project and municipal agencies.

4. **Fiduciary aspects.** As indicated in Annex 3, the residual procurement and financial management risks are rated moderate. The focus of Bank implementation support on procurement and FM will therefore be on: procurement prior and post-reviews, and resolving issues identified; monitoring implementation of the Procurement Plan and approving updates of the plan; confirming that FM is being implemented as per the FMM; confirming that IFRs and audit reports are submitted on time and are acceptable; and issues identified by auditors are properly addressed.

Table A4-1: Implementation Support Plan

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First 24 months	<ul style="list-style-type: none">• TOR finalization• Port and	<ul style="list-style-type: none">• Technical (project management,	6-7 staff, two to three trips per staff; some	

	logistics park business plan development <ul style="list-style-type: none"> • Port and logistics park operation plan development • Information center design • Procurement • Financial management • Safeguards • Project implementation 	port and logistics park operation and management) <ul style="list-style-type: none"> • Procurement • Financial management • Safeguards 	thematic trips as needed.	
24-60 months	<ul style="list-style-type: none"> • Project implementation • Procurement • Financial management • safeguard • Monitoring and supervision 	<ul style="list-style-type: none"> • Technical (as above) • Procurement • Financial management • Safeguards 	6-7 staff, one to two trips per staff; some thematic trips as needed.	

Table A4-2: Skills Matrix Required

<i>Skills Needed</i>	<i>Number of Staff Weeks</i>	<i>Number of Trips</i>	<i>Comments</i>
Logistics park planning and operation	1 staff member: 11 weeks	11	2 trips+2 weeks per project year+1 extra week+1extra trip in the first year
Port operation	1 staff member: 6 weeks	11	2 trip +2 weeks per project year +1 extra week in the first year
Procurement	1 staff member: 5 weeks	5	2 trip+1 week per project year
Financial management	1 staff member: 5 weeks	5	2 trip+1 week per project year
Environment	1 staff member: 5 weeks	5	2 trip+1 week per project year
Resettlement	1 staff member: 5 weeks	5	2 trip+1 week per project year

5. **Location of staff expertise.** Team leadership, environmental and social safeguards, financial management, and procurement support will be provided by the Bank's country office-based staff. Technical expertise will be provided by Bank staff in Beijing and Singapore and specialist consultants.

Annex 5: Demand Analysis

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

1. Yichang is located on the Yangtze River, about midway between Chongqing and Wuhan, with sections of the port both above and below the Three Gorges Dam. It is an important transshipment point for road traffic transferring to river transport above the Three Gorges Dam and is also located where one of the main north-south rail lines crosses the Yangtze. It is thus a key transportation hub as well as being an industrial center in its own right.

2. Yichang is a prefecture comprising six counties, extending from Zigui in the west for 180 kilometers to Zhijiang in the east, with a total population of 4 million. The main urban center is Yichang City, with a population of 1.4 million, located on the east bank of the Yangtze below the dam.

Current Port Traffic and Capacity

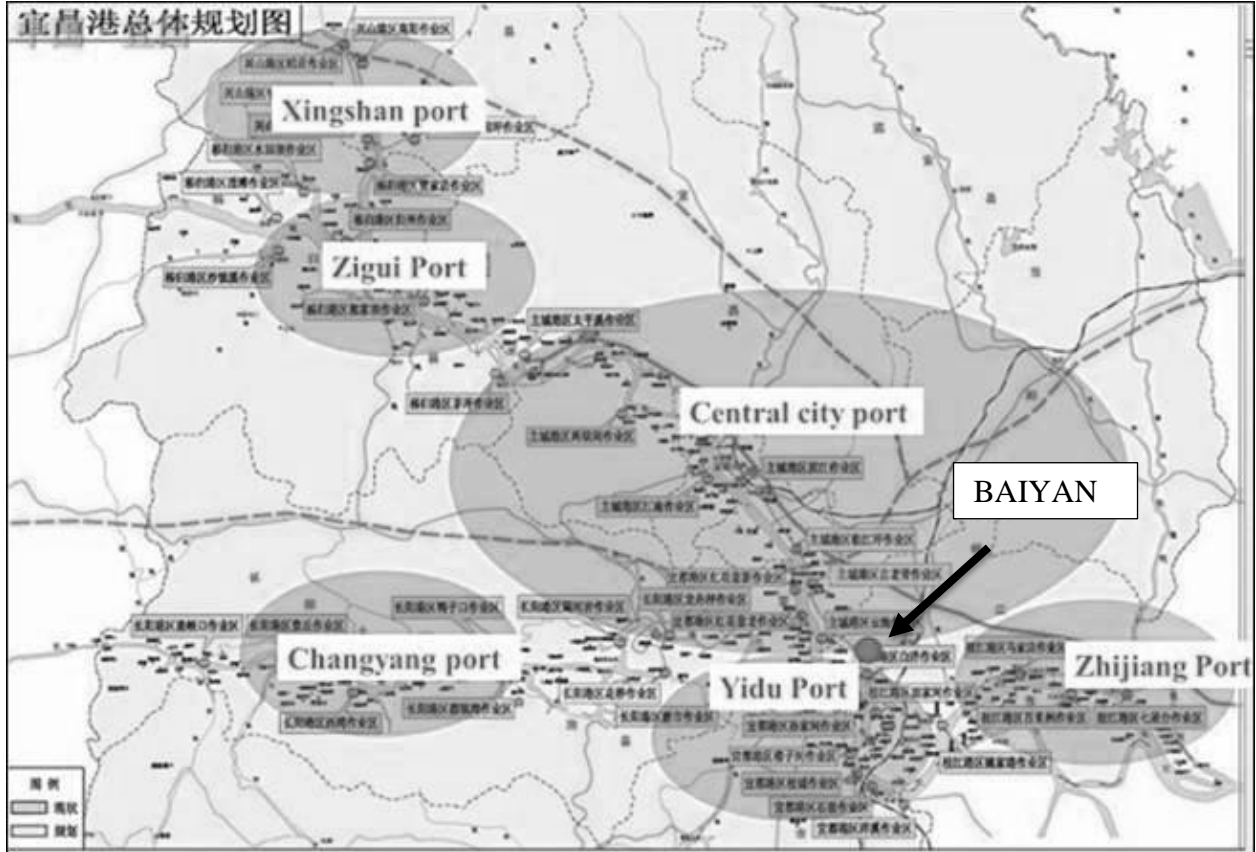
3. Yichang Port consists of six port groups (Figure 1): Central City, Xingshan, Zigui, Yidu, Zhijiang and Changyang, covering all public ports within the prefecture. Two of these groups, Xingshan and Zigui, are north of the dam; Central City and Zhijiang are on the east bank of the Yangtze; Yidu is on the west bank of the Yangtze; and Changyang is a group along the Qing tributary of the Yangtze. Within each port group there are many individual wharfs and jetties. In addition to the public Yichang Port, there are several private port facilities which serve individual industrial plants. The proposed project will form part of the Central City group and is located downstream of the main urban area below the dam.

4. Over the last 10 years, the throughput of Yichang Port as a whole has increased from 24 million tons to 78 million tons, an average growth rate of 12 percent per annum (Figure 2). Table 1 gives a more detailed analysis by port group over the last five years.

Table 1: Traffic handled in Yichang Port 2011-15 (million tons)

Port group	2011	2012	2013	2014	2015	Growth % p.a. 2011-15
Central City	13.6	13.4	15.2	17.5	21.9	12.6
Xingshan	3.1	4.8	6.6	6.9	7.3	23.8
Zigui	18.4	19.6	24.2	27.9	28.5	11.6
Yidu	6.7	7.2	7.7	7.7	9.0	7.7
Zhijiang	3.8	4.7	6.8	7.2	9.0	24.0
Changyang	0.7	0.8	1.0	1.3	2.0	30.0
Total	46.4	50.5	61.5	68.5	77.8	13.8

Figure 1: Port Groups within Yichang Port



5. The fastest growing groups have been the smallest ports, which have effectively functioned as overflow ports or ports to which traffic is being relocated from the central area. The different port groups handle a range of traffic, with general freight concentrated in the Central City and Zhijiang groups (Table 2). Much of the growth in recent years has been construction materials (gravel, sand) required by the construction industry in Yichang; some of this has been locally sourced and this traffic appears in Table 2 as both dispatched and received.

6. Zigui port, on the eastern bank of the river north of the dam, only handles Ro-ro traffic to and from Chongqing. This is mostly to and from Wuhan and other downstream centers and uses the Ro-ro service to avoid the mountains between Yichang and Chongqing. Containers are currently handled at Yunchi, a site within the Central City group some 20 km south of the main urban area. In 2015, 131,000 TEU were handled.

Table 2: Commodities in Yichang Port by Port Group 2015

(million tons)

	Coal	Petroleum	Minerals	Const. materials	Other	Total
Despatched						
Central City	2.2	0.7	2.2	3.0	2.9	11.0
Xingshan	0.0	0.0	6.4	0.0	0.5	6.9
Zigui	0.6	0.0	4.8	2.7	9.4	17.5
Yidu	2.3	0.0	1.3	0.8	1.5	5.9
Zhijiang	0.0	0.0	0.0	0.2	1.8	2.0
Changyang	1.0	0.0	0.0	0.0	0.0	1.0
Total	6.3	0.7	14.7	6.7	15.9	44.3
Received						
Central City	2.7	0.5	1.8	3.3	2.6	10.9
Xingshan	0.1	0.0	0.0	0.1	0.2	0.4
Zigui	0.3	0.0	0.3	1.1	9.3	11.0
Yidu	1.4	0.1	0.2	1.4	0.0	3.1
Zhijiang	0.5	0.0	1.6	2.9	2.0	7.0
Changyang	1.0	0.0	0.0	0.0	0.0	1.0
Total	5.8	0.5	3.9	8.7	14.6	33.5
Total traffic	12.1	1.2	18.6	15.4	30.5	77.8

Three Gorges Dam

7. The Three Gorges Dam currently handles more than 100 million tons through the ship lock, exceeding its capacity. In addition, a further 10 million tons of Ro-Ro traffic is handled to and from Zigui port. About 80 percent of the current volume is bulk (construction materials, minerals and coal) or semi bulk (fertilizer, cement, steel). Most of the growth in future years is expected to be general cargo and domestic container freight.

8. The Three Gorges Port Development Plan forecasts total demand across the Three Gorges will increase to 200 million tons in 2025 and 270 million tons by 2040 (Figure 2). As the capacity of the ship lock is around 100 million tons, the surplus demand will need to be transshipped by land past the dam. These will be substantial volumes, estimated at about 45.3 million tons in 2020 and over 100 million tons by 2030. The plan currently being implemented is to develop terminals for this transshipment in the south and at Maoping in the north, with containers being transferred between them by rail.

Forecast Demand

9. Future demand at Yichang in general, and Baiyang in particular, will be a function not only of growth in local demand but also of its likely development as a transshipment center, not only for bypassing the Three Gorges Dam but also as a distribution center by road and rail for central and western China via Xian and Lanzhou.

10. The current port development plans see the continued transfer of freight, especially bulk minerals, away from its traditional home in the urban Central City wharves, which will either concentrate on passengers or be redeveloped. Several of these traffics have been reassigned to Baiyang Port as per the Yichang port development plan.

11. Throughput in the Yichang port system will continue to increase during the 13th and 14th Five Year Plan periods in line with economic growth and is expected to (excluding Dam transshipment traffic) exceed 120 million tons by 2025 at an estimated growth rate of four percent. However, whilst the throughput at Baiyang Port will be influenced to some extent by the overall growth in the port as a whole, by far the most important factors will be the reassignment of freight from the Central City wharves and the growth of the Baiyang Industrial Area adjacent to the port and logistics center. The Baiyang Port forecasts are therefore based on a bottom-up assessment rather than a top-down estimate based on a share of Yichang's traffic as a whole.

12. The Baiyang Industrial Park (BIP), adjacent to the port, will focus on developing high value-added manufacturing, including fine chemicals, equipment manufacturing, and new materials. The major cargo demands at the port include both the export of products from BIP and surrounding areas, as well as the import of raw materials and components for the BIP industries. The major traffics in the short-medium term include: stone, gravel, and phosphate ore, both to be transferred from their current facilities in the Central Port area; minerals including clay, silica sand for glass-making and limestone; industrial products (including steel and equipment); and some miscellaneous traffic. Table 3 provides indicative forecasts to 2025 by commodity.

13. In addition to some cross-dam container traffic and transshipment traffic to and from the north-west, Baiyang will also handle containerized cargo to and from the BIP. Container traffic growth in recent years has been around 20 percent per annum and the container throughput of Yichang City in the medium-term (2025) is expected to reach 0.5 – 1 million TEU. The current facility at Yunchi Port has very limited container storage facilities and shippers are keen to transfer at least a part of their volume to Baiyang. Based on discussions with these shippers, the container throughput of Baiyang is forecast to be 0.13 million TEU by 2020 and 0.2 million TEU by 2030, increasing to 0.6 million TEU by 2035. About 15 percent of this is expected to be transshipment traffic to and from the northwest. In addition, by 2035 about 0.5 million TEU of cross-dam transfers (about 10 percent of the total being transferred) are expected.

Table 3: Forecast Throughput of Baiyang Port by Commodity

(Million Tons)

Cargo type	2020			2025		
	Import	Export	Total	Import	Export	Total
Phosphate ore	0.00	2.16	2.16	0.00	2.25	2.25
Limestone ore	0.00	0.40	0.40	0.00	0.45	0.45
Stone and gravel	2.00	0.00	2.00	2.50	0.00	2.50
Pottery clay	0.33	0.00	0.33	0.38	0.00	0.38
Glass sand	0.35	0.00	0.35	0.45	0.00	0.45
Building materials	0.00	0.20	0.20	0.00	0.30	0.30
Steel	1.30	0.00	1.30	1.60	0.00	1.60
Mechanical equipment	0.12	0.08	0.20	0.30	0.10	0.40
Miscellaneous	0.20	0.10	0.30	0.20	0.20	0.40
Container (10,000 TEU)	0.06	0.07	0.13	0.09	0.11	0.20
Tons (million)	0.60	0.70	1.30	0.90	1.10	2.00
Total	4.96	3.64	8.54	6.33	4.40	10.73

Table 4: Forecast Traffic at Baiyang Port 2021-2045

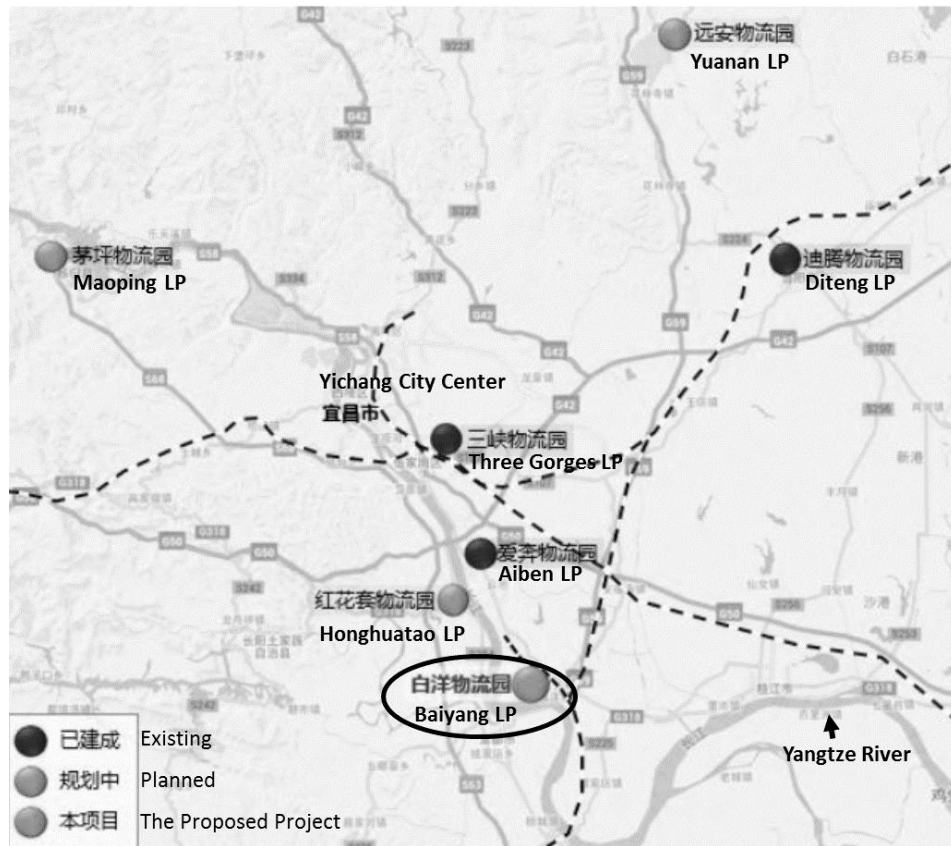
(Million tons)

	2021	2025	2035	2045
Phase 1				
Containers	1.00	1,20	4.50	4.50
Other	2.64	2.73	1.29	1.29
Total	3.64	3.73	5.79	5.79
Phase 2				
Containers	0.30	0.80	6.50	6.50
Other	4.60	6.20	4.00	4.00
Total	4.90	7.00	10.50	10.50
Phase 3				
Containers	-	-	-	5.28
Other	-	-	-	0.33
Total	-	-	-	5.61
Total port				
Containers	1.30	2.00	11.00	16.28
Other	7.24	8.73	5.29	5.62
Total	8.54	10.73	16.29	21.90

BAIYANG LOGISTICS PARK

14. Currently there are three significant logistics parks in Yichang (Three Gorges, Aiben and Diteng) who between them handle about 7.5 million tons per annum. Three additional logistics parks (Honghuatao, Maoping and Yuan'an) are under construction, see Figure 2. However, these latter three and Diteng are located either further away from Yichang city center or are on the opposite side of the Yangtze River. In practice Baiyang Logistics Park (BLP) would only be competing with the three existing parks located in central Yichang.

Figure 2: Large Scale Logistics Parks in Yichang



15. There is little doubt that demand for logistics in China is primarily driven by GDP; however, detailed time-series on a consistent basis is difficult to establish. Such evidence as there is suggests that logistics demand, as in the rest of the world at a comparable stage of development, has an elasticity of approximately 1 with respect to GDP. On this basis, the existing logistics throughput in Yichang is likely to approximately double to about 15 million tons by 2025. This excludes throughput estimated at three million tons associated with the Baiyang Industrial Area (BIA), which can be expected to be almost all handled by BLP, given its close proximity to both the BIA and the port.

16. Demand associated with non-BIA traffic has been estimated using a simple logistics park choice model based on transport costs to and from the various freight origins and destinations.

Other things being equal, traffic naturally tends to gravitate to the cheapest logistics park in terms of travel cost, but it is rare for a single park to have all the traffic to and from a zone, except in special cases like BLP and BIA. The allocation of traffic between the possible parks was estimated using a logit choice model, calibrated to provide the best fit to observed data.

17. Baiyang is forecast to dominate logistics flows to Zhijinag and Yidu, not surprisingly as it is the closest park to these areas. It only manages to achieve a small share of the central Yichang market (where the Three Gorges park has by far the greatest share of the market) and very little of the northern markets of Zigui, Dangyang and Yuan'an. It has a reasonable share of the external markets, helped by its proximity to both Baiyang Port and the rail network, with their much cheaper transport costs for longer-distance flows.

18. The precise mix of products using the BLP will depend on the detailed development of BIA, as well as Zhijiang and Yidu, during the current Five Year Plan. Table 5 summarizes a possible mix of products for 2025 based on current research; the actual mix will depend on development patterns over the next ten years as well as the marketing strategy developed during project implementation.

Table 5: BLP 2025 Indicative Product Mix

(Million tons)

Product	Tons (million)
Building materials	2.19
Metallurgy	0.46
Steel products	1.19
Food processing	0.35
Equipment manufacturing	1.02
Textile	0.06
Bio-pharmaceutical	0.04
Urban distribution	0.33
Total	5.64

Annex 6: Economic Analysis

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

Evaluation of the Baiyang Component

1. Construction of Phase 2 of Baiyang Port is part of a general program of relocating port freight facilities, particularly for bulk and semi-bulk traffics, away from the old inner city area and into a modern and more efficient facility. In the absence of Phase 2, Yichang would probably develop additional capacity at existing ports in this region. The three principal candidates are: Yunche, the main existing container terminal, for containers; Zhijiang, currently specializing in chemicals, for general cargo; and Yidu for bulk commodities. All three are further way from the main land origins and destinations compared to Baiyang and hence would incur additional transport costs. All three are also relatively inefficient and a new port like Baiyang would generate lower operating costs.

2. All three ports would also need to expand their existing capacity to handle the traffic projected for Baiyang in 2025 and beyond. The evaluation therefore consists of comparing the difference in transport and port operating costs for the different locations with the difference in capital cost between constructing Phase 2 at Baiyang Port and expanding existing facilities.

3. **Capital Costs.** The economic cost of Baiyang Port, including a 67 percent share of the road infrastructure serving the port and park, is RMB1 billion, derived from the financial cost by removing VAT and interest during construction. With a planned capacity of seven million tons p.a., this is equivalent to a cost of RMB140 per annual ton. However, this cost is based on initially installing general-purpose cranes at all but one of the berths. As the port throughput is increasingly geared towards containers, these cranes can be progressively replaced by specialized container cranes, doubling the capacity of each berth so that the total capacity of the port (Phase 1 plus Phase 2) by 2035 will be around 20 million tons p.a., compared to the 10.9 million tons planned for 2020.

4. The evaluation assumes that five higher capacity cranes are progressively installed between 2025 and 2035 at a cost of RMB30 million each. The increased throughput available with these cranes will also require supporting investment in vehicles and storage areas; an additional RMB50 million has been allowed for this. This has been represented in the evaluation by an annual investment cost of RMB20 million p.a. for the ten years. Although further expansion of capacity on the Phase 1 and Phase 2 berths would probably also be possible after 2035, the development options are less clear and the evaluation assumes constant demand after that date.

5. The cost of expanding the existing sites has been derived from the construction cost per ton of the capacity of comparable ports in the Yangtze system. There is a wide range between the ports; for the purposes of evaluation, a cost of RMB80 per ton (the average of Chizhou and Yidu) has been adopted as representative of the cost of expanding the existing sites. As this is a critical assumption, sensitivity tests have also been undertaken for expansion costs of RMB60 and RMB100 per annual ton.

6. The expansion of the alternative sites is assumed to take place equally in 2019 and 2020, to accommodate the forecast 2021 tonnage of 4.9 million tons. Additional capacity of 1.05 million tons p.a. is then provided at the alternative sites between 2022 and 2023 to match the forecast Baiyang Port throughput of 7.0 million tons. After 2025, an additional capacity of 0.35 million tons is provided annually at each of the alternative sites.

7. **Transport Costs.** If Baiyang Port is not constructed, the planned traffic (almost all of which is to and from either BLP or points further north and west) will have to use other ports at a greater travel distance. The difference in access costs in 2025 ranges from RMB6 per ton to RMB37 per ton, depending on the port and commodity, with an average of RMB24 per ton. Although this average will vary as the traffic mix varies, it is unclear whether this will be greater or less and this average has been adopted as the cost saving for Baiyang throughout the evaluation period. Sensitivity tests have been carried out for savings per ton of RMB18 per ton and RMB12 per ton.

8. **Operating Costs.** Baiyang is a more modern port compared to the potential alternatives and its operating costs will be lower by at least 50%. Compared to the probable alternatives, the total operating cost savings at Baiyang will be RMB32 million or about RMB4.50 per ton.

9. **Results of the Evaluation.** Based on the above assumptions, the Baiyang Port Phase 2 EIRR is 20%, with an NPV (at an 8% discount rate) of RMB1.2 billion. Table 1 summarizes the results of the economic analysis, including sensitivity tests performed on the key inputs. The project is very robust against the key assumptions, consistently showing an EIRR of 15 percent or higher.

Table 1: Results of Baiyang Port Phase 2 Economic Analysis

	EIRR (%)
Base Case	20
Investment cost +10%	18
Avoided investment -20%	19
Base demand reached in 2030 instead of 2025	15
Unit benefit -25%	17
Unit benefit -50%	13

Evaluation of the Baiyang Logistics Park Component

10. Baiyang Logistics Park (BLP) is one of seven that are planned for Yichang prefecture. If it is not constructed, there are two possible alternatives: (i) a replacement logistics park elsewhere in the Yichang area; and (ii) expanding existing logistics parks to handle the activities forecast for Baiyang.

11. The Baiyang facility is designed to service the southern part of Yichang, and the Baiyang Industrial Area (BIA) in particular. There is no readily available site between Baiyang and the main Yichang urban area; any replacement park would therefore need to be located further to the south, in the Zhijiang area. Examination of alternative sites indicates that the capital cost of constructing a similar facility to that proposed for BLP would be at least the same and probably

higher, because of the need for more extensive earthwork. If a replacement general-purpose facility was built in Zhijiang, the only part of Yichang which would benefit from reduced transport costs is Zhijiang itself, an area that generates only an estimated 11 percent of the regional demand for logistics services. As the replacement option would probably cost more and generate increased transport costs, it has therefore not been considered further as a viable alternative to BLP, other than for BIA traffic which was handled through Zhijiang Port.

12. The existing logistics parks could be expanded, at a cost, to handle the activities forecast for BLP. Traffic to and from BIA and southern Yichang would incur greater transport costs, but traffic to and from elsewhere in Yichang would incur savings. There would also be some difference in the cost of accessing the ports: river transport costs would be more expensive by up to RMB3 per ton and land transport costs between the ports and the logistic parks would in general (but not always) be greater by up to RMB10 per ton. In theory, there might be differences in operating costs between BLP and the other parks, but they are all relatively new and any such difference has not been considered.

13. The evaluation therefore consists of comparing the difference in transport costs for the different locations, with the difference in capital costs between constructing a new facility at BLP and expanding existing facilities.

14. **Capital Costs.** The economic cost of BLP, including a 33 percent share of the road infrastructure serving the port and park, is RMB1.82 billion, derived from the financial cost by removing VAT and interest during construction. With a planned capacity of 5.6 million tons p.a., this is equivalent to a cost of RMB322 per annual ton.

15. The cost of expanding the sites has been derived from the construction costs of the other parks in Yichang per ton of capacity. The largest of those currently operating, by far, is the Three Gorges Park, which also provides a range of services comparable to those planned at Baiyang, and for which the cost was RMB240 per annual ton, about 20 percent cheaper than at Baiyang.

16. The evaluation has assumed the Three Gorges Park cost of RMB240 per annual ton as representative of the cost of expanding existing sites. As this is a critical assumption, sensitivity tests have also been carried out for expansion costs of RMB200 and RMB160 per annual ton.

17. The expansion of the alternative sites is assumed to take place equally in 2019 and 2020, in order to accommodate the forecast 2020 tonnage of 3.82 million tons. Additional capacity of 300,000 tons p.a. is then provided at the alternative sites over the next five years to match the forecast BLP throughput of 5.2 million tons.

18. **Transport Costs.** As discussed in the demand annex, construction of BLP will generate changes in the transport patterns, and hence costs, throughout the Yichang region. The benefits associated with Baiyang LP consist of: (i) user benefits for general logistics throughout the Yichang region, as a result of the greater choice it provides and the reduced transport costs for some zones using a logistics park; and (ii) transport savings associated with traffic to and from BIA.

19. User benefits associated with general traffic have been estimated using the transport costs embedded in the logistic park choice demand model. The demand model was run for two cases, with and without Baiyang, and the associated transport costs were calculated. The difference represents the user benefits across the whole of the region served by the Yichang logistics, attributable to the construction of Baiyang. The estimated user benefit of RMB44 million in 2025 is equivalent to a saving of RMB22 per (non-BIA) ton handled at Baiyang.

20. In the absence of Baiyang LP, traffic to and from BIA itself is likely to be handled directly through a port and dedicated park in the Zhijiang area. This will incur an additional transport costs of about RMB15 per ton compared to the use of Baiyang LP.

21. Given the forecast of 60 percent of BLP throughput being associated with BIA and 40 percent with other areas, the weighted average user benefit per ton handled is RMB17.80.

22. **Results of the Evaluation.** Based on the above assumptions, BLP’s EIRR is 10%, with an NPV (at a discount rate of 8%) of RMB165 million. Table 2 summarizes a series of sensitivity tests performed on the key inputs. The project is reasonably robust against the key assumptions, consistently showing an EIRR of 7-10 percent.

Table 2: Results of the Economic Analysis of Baiyang Logistics Park

	EIRR (%)
Base Case	10
Investment cost +10%	8
Avoided investment -20%	8
Base demand reached in 2030 instead of 2025	7
Unit benefit -25%	8
Unit benefit -50%	5

Overall Evaluation

23. The two components together have an EIRR of 15 percent and an NPV of RMB1.39 billion.

Annex 7: Financial and Fiscal Analysis

COUNTRY: CHINA

THREE GORGES MODERN LOGISTICS CENTER INFRASTRUCTURE PROJECT

1. This annex includes the following sections: (A) financing arrangements for the proposed project under China's revised budget law; (B) financial analysis of new Baiyang Port and Baiyang Logistics Park; and (C) assessment of YMG's fiscal space to provide counterpart funds under the project.

A. Project Financing Arrangements under the Revised Budget Law

2. The Revised Budget Law allows revenue-generating companies to borrow from commercial banks to finance their counterpart fund obligations under the project. As the new Baiyang Port (Component 1) and Baiyang Logistics Park (Component 2) of the proposed project will generate revenues, Yichang Transportation Investment Company (YTIC), the owner and operator of Baiyang Port and Logistics Park, is eligible to borrow directly from the market to provide counterpart financing for the project. Given its cash flows, government subsidies and proper financial reporting, two domestic banks have issued letters of intent to provide a loan commitment to YTIC for financing the proposed project.

3. The project cost of RMB3.04 billion (US\$446 million equivalent) will be financed by IBRD, Commercial Bank and YMG as follows:

- a) **IBRD loan (US\$200 million)** to be on-lent by MOF to YMG, and by YMG to YTIC in line with the established procedures for IBRD loans in China. YTIC will use revenues to repay the loan obligations to YMG, who in turn will repay the loan to IBRD.
- b) **Commercial Bank Loan (RMB783 million; US\$115 million equivalent)** to YTIC. YTIC will use revenues from the operations of the new Baiyang Port and Baiyang Logistics Park to repay the commercial bank loan.
- c) **YMG fiscal support (RMB895 million; US\$131.4 million equivalent)** will be used to cover the counterpart fund requirements and will finance land acquisition and resettlement, consultancy services and other fees, and contingencies.

4. Excel-based financial models were developed, based on project finance, to determine whether Baiyang Port and Baiyang Logistics Park operations will generate adequate revenues so that YTIC will be able to repay the loans from IBRD and the domestic bank and cover its operating and maintenance expenditures; and if not, to determine the magnitude of the subsidy required from YMG. Although YTIC has on-going businesses, Baiyang Port and Baiyang Logistics Park operations will be developed and operated as a separate entity. YTIC will be the owner of this entity. The financial analysis for Baiyang Port and Baiyang Logistics Park has been conducted without involving YTIC's current lines of business. YTIC will prepare and maintain separate financial statements for Baiyang Port and Baiyang Logistics Park.

5. **Summary of the financial analysis.** The results of financial analysis show that both Baiyang Port and Baiyang Logistics Park projects are financially viable and will generate

positive cash flows and revenues from the second to third years of operation and will be able to cover operating expenses and debt service obligations. Although YMG will need to provide fiscal support during the construction period to cover counterpart fund requirements, the projects will not require operating subsidies to be financially sustainable.

B (1). Financial Analysis of Baiyang Port

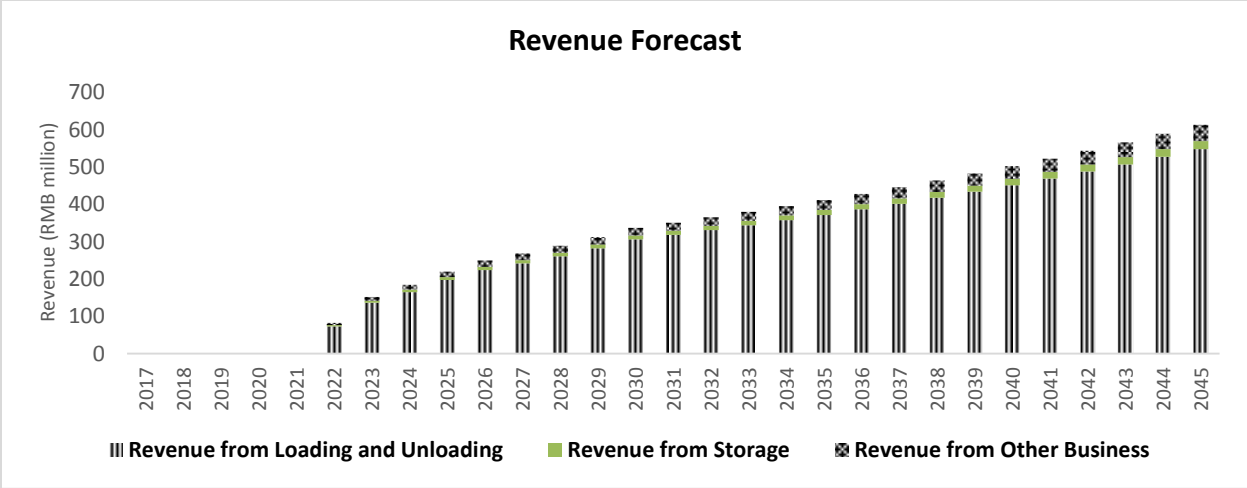
6. This section describes the financial analysis of Baiyang Port. The analysis is based on the feasibility study report as well as information provided by project entities. The financial forecast is from 2017 to 2045. The investment in Baiyang Port includes port facilities and equipment, as well as land acquisition and resettlement for the Baiyang Port. In addition, road transport infrastructure and capacity building, which are part of Baiyang Port, are also included. The estimated cost of the project is RMB1.08 billion, to be financed about 47 percent by the IBRD loan, 27 percent by the commercial bank loan, and the remaining 26 percent by the YMG fiscal budget. The Baiyang Port is expected to be completed by the end of 2021 and will be operational from early 2022.

7. **Revenue forecast.** The Baiyang Port’s throughput rate in its first year of operation is expected to be 40 percent; it will reach 95 percent within five years of operation and will continue operating at that level, as presented in Table 1 below.

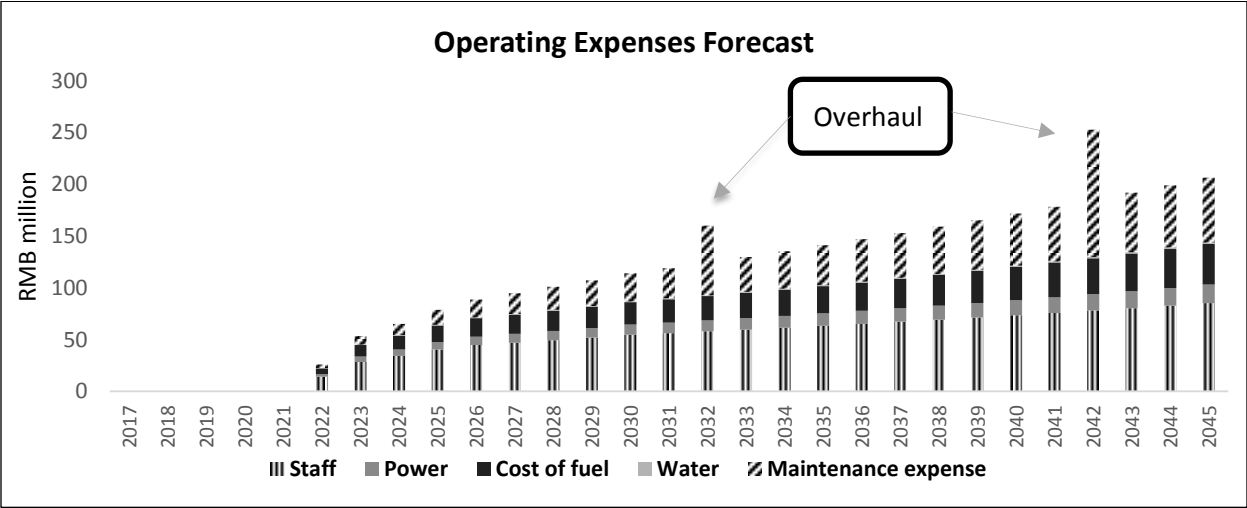
Table 1: Throughput Rate of Baiyang Port

	2022	2023	2024	2025	2026	2030	2035	2040	2045
Occupancy rate of Baiyang Port	40%	70%	80%	90%	95%	95%	95%	95%	95%

8. The Baiyang Port will generate revenues from loading and unloading, storage and other business; Annex 5: Demand Analysis provides details. The Baiyang Port’s revenue will grow as the occupancy rate grows. The Port’s main source of revenue, loading and unloading of throughput, is expected generate about 89 percent of total revenue; storage and other business are expected to generate about four percent and seven percent of revenue respectively. In 2022, the first year of operation, the project is expected to generate a gross operating revenue of RMB82 million, which is expected to reach RMB613 million by 2045. During the early phase of operation, revenues are expected to grow at a higher rate (at an average of 13 percent per year) as the port will attract more throughput, and is expected to then grow at a stable four percent annual growth rate. The following graph presents the expected revenues during the forecast period.



9. **Expenses forecast.** Key operating expenses include staff salaries and benefits, and costs of fuel, power, maintenance, water, and other expenses. It is estimated that Baiyang Port would need about 506 staff when fully operational, and staff salaries and benefits would account for about 46 percent of total operating expenses each year. Costs of fuel, power and maintenance will account for about 19 percent, 9 percent and 13 percent respectively of total operating expenses each year. The Port plans to overhaul its equipment and building once every 10 years; therefore, expenses would increase substantially in those years. Similar to revenue, it is expected that operating expenses will continue to grow at a higher rate (at an average of 11 percent per year) during the early stages of operation and would then grow at a stable rate of four percent each year. The graph below presents the components of operating expenses and depreciation during the forecast period.



10. **Debt repayment and sustainability.** The Baiyang Port is a financially sustainable project as it will not require subsidies from YMG. The Project will generate positive cash flows and have adequate liquid assets to cover its operating expenses and short-term obligations in all

years, except the first year of operation. The project would be able to service the IBRD and domestic loans on time and still have positive cash flows, as presented in the Table 2 below.

**Table 2: Financial Forecast of Baiyang Port
(RMB million)**

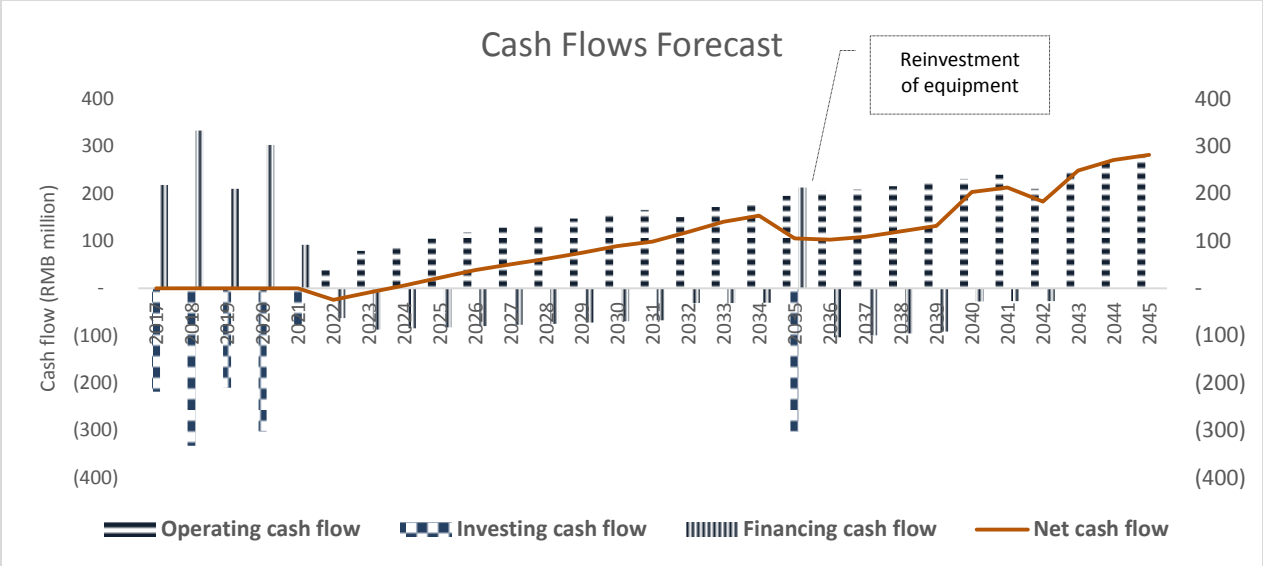
	2022	2023	2024	2025	2026	2030	2035	2040	2045	Total
Total revenue	77	142	172	205	233	315	384	469	573	8,551
Debt service	63	87	85	82	80	70	30	28	0	1,081
Repayment of IBRD loan with capitalized interest	-	27	27	27	27	27	27	27	-	534
Repayment of domestic loan with capitalized interest	34	34	34	34	34	34	-	-	-	345
Interest payment for IBRD loan	9	9	8	8	8	6	3	1	0	100
Interest payment for domestic loan	19	17	15	13	11	3	0	0	0	101
Total OPEX and debt service	89	141	150	161	169	184	171	200	206	4,319
Surplus/(Deficit=Operating subsidy required)	(12)	2	22	44	64	131	213	270	366	4,233

11. Sensitivity analysis was conducted to assess the financial viability of the project, if the Baiyang Port were to mobilize commercial financing to fund a portion of project costs instead of borrowing from IBRD. The results of analysis indicate the project will have a negative NPV of RMB15.93 million and a Project IRR 7.9 percent, which is below the 8 percent discount rate (see Table 3 below). Therefore, the project will not be financially viable in the absence of the IBRD loan.

Table 3. Results of Sensitivity Analysis

	Project IRR (%)	Project NPV (RMB million)
Financed through IBRD and domestic loans	8.2	24.54
Financed through domestic loans (no IBRD loan)	7.9	(15.93)

12. Profitability. The results of financial analysis show that the investment in Baiyang Port will have a Project IRR of 8.2 percent and a Project NPV of RMB25 million. The Project IRR exceeds the 8 percent discount rate. The following graphs presents cash flows from the Baiyang Port during the forecast period.



B (2). Financial Analysis of Baiyang Logistics Park

13. This section describes the financial analysis of Baiyang Logistics Park. The analysis is based on the feasibility study report as well as information provided by Yichang PMO, Yichang Finance Bureau and YTIC. The financial forecast is from 2017 to 2045. The investment in Baiyang Logistics Park includes logistics park facilities and equipment, as well as land acquisition and resettlement for the park. In addition, the costs of the Baiyang logistics information system and capacity building are also included. The estimated cost of project is RMB1.80 billion, with financing of about 47 percent by the IBRD loan, 27 percent by the commercial bank loan, and the remaining 26 percent by YMG fiscal budget. The Baiyang Logistics Park is expected to be completed by the end of 2021 and would be operational from early 2022.

14. **Revenue Forecast.** The Baiyang Logistics Park’s occupancy rate in its first year of operation is expected to be 50 percent and is expected to increase by 10 percent each year. By the fifth year of operation, the occupancy rate is expected to reach 95 percent and BLP is expected to operate at this level thereafter (Table 4 below).

Table 4: Occupancy rate of Baiyang Logistics Park

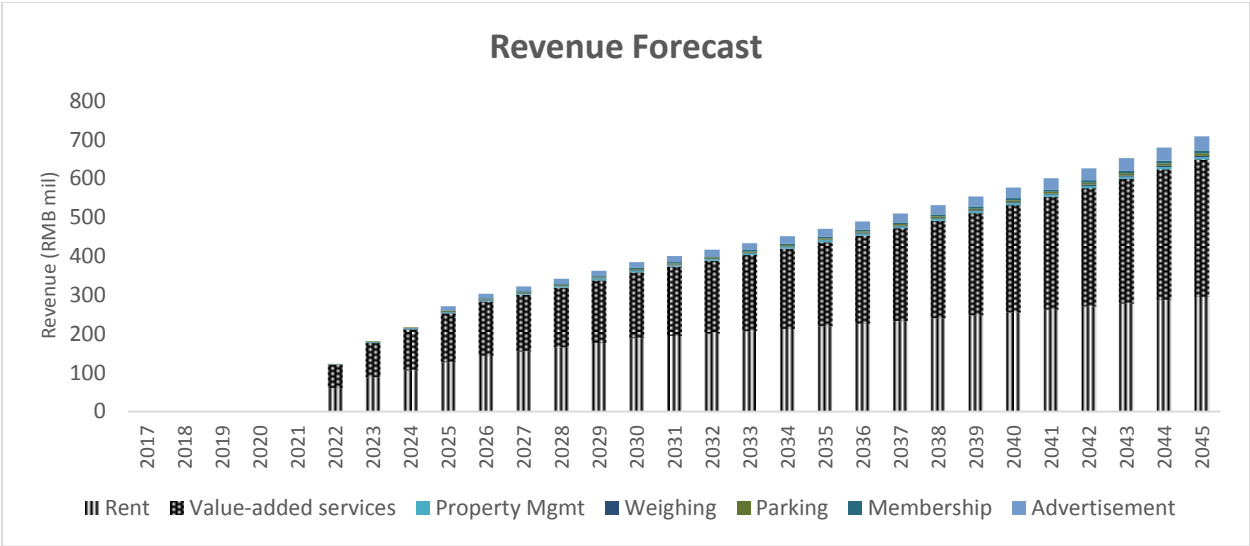
	2022	2023	2024	2025	2026	2030	2035	2040	2045
Occupancy rate of Baiyang Logistics Park	50%	70%	80%	90%	95%	95%	95%	95%	95%

15. The Baiyang Logistics Park’s main sources of revenue are rent and value added services. The Park will generate revenue from renting out its general logistics area, commercial trade logistics area (A) and commercial trade logistics area (B). The Park is expected to generate about 49 percent of its total revenue each year from rent. In 2022, the first year of operation, the Park is

expected to generate a gross revenue of about RMB60 million from rent, which is expected to reach RMB295 million by 2045. Revenue is expected to grow at a higher rate (at about eight percent per year) during the initial years of operation, before stabilizing at a three percent annual growth.

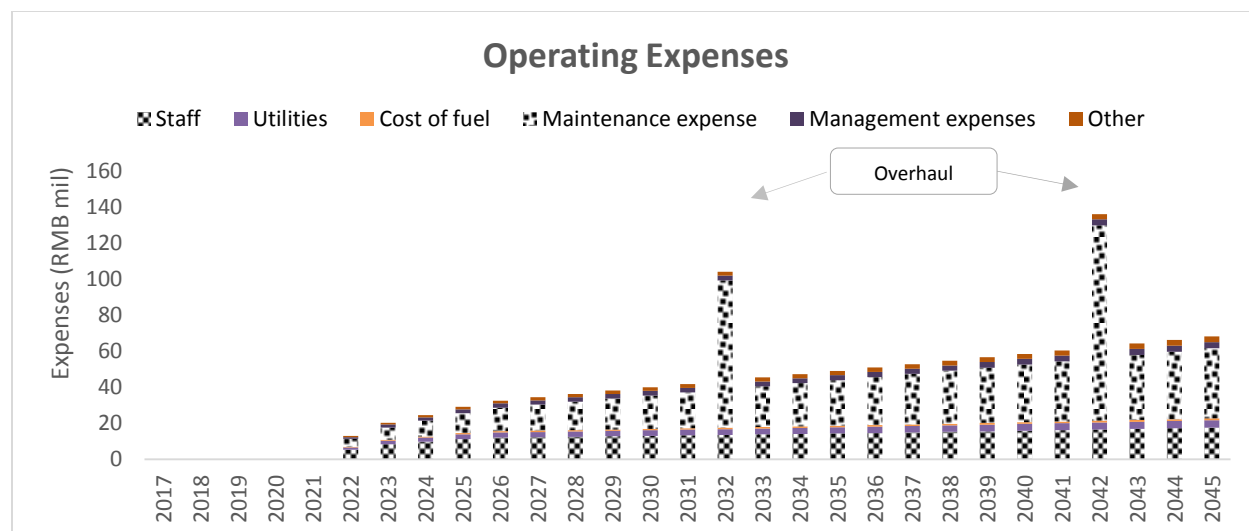
16. The Baiyang Logistics Park’s value-added services include, but are not limited to: (i) equipment lease services; (ii) packaging services; (iii) storage and processing; and (iv) loading, unloading and distribution services. Based on the operating data of comparable logistics parks in Xiamen and Fuzhou, the estimated gross revenue from value-added services is about one percent of the total throughput value (e.g., throughput value equals 1,000 ton of goods x ¥500/ton). Under this assumption, it is expected that the Baiyang Logistics Park will generate on average 49 percent of its total revenue from value-added services each year. In 2022, the Park is expected to generate about RMB60 million revenue (before VAT) from its value added services, and is expected to grow at five percent each year. By 2045, value-added services revenue is expected to reach RMB354 million (before VAT).

17. Other sources (which are expected to account for about 2 percent of total revenue each year) include property management, weighing, parking, membership and advertisement. The graph below presents revenues during the forecast period.



18. **Expenses forecast.** Key operating expenses include staff salaries and benefits, utilities, maintenance, cost of fuel, management expense and other expense. The Baiyang Logistics Park plans to hire about 214 staff when fully operational. Staff salaries and benefits are projected to account for about 39 percent of total operating expenses each year. Maintenance, utilities, and management expenses are projected to account for about 36 percent, 9 and 8 percent respectively of total operating expenses each year. The logistics park plans to overhaul its equipment and building once every 10 years; expenses will therefore increase substantially in those years. In 2022, total operating expenses are expected to be about RMB13 million; by 2045 expenses are expected to increase to about RMB68 million. Similar to revenue, it is expected that operating

expenses will increase at a higher rate (at about an average of 10 percent per year) during the early years of operation and are expected to subsequently grow at 3 to 4 percent each year. The graph below presents the components of operating expenses and depreciation during the forecast period.



19. **Debt repayment and sustainability.** The Baiyang Logistics Park is a financially sustainable project as it will not require operating subsidies from YMG. Although the Logistics Park will experience small losses and negative cash flows in its first two years of operation, the project will generate positive cash flows and adequate liquid assets in other years to cover operating expenses and short-term obligations. The project will also have adequate cash flows to service the IBRD loan and domestic loans on time; see Table 5 below.

Table 5. Financial Forecast for Baiyang Logistics Park (RMB million)

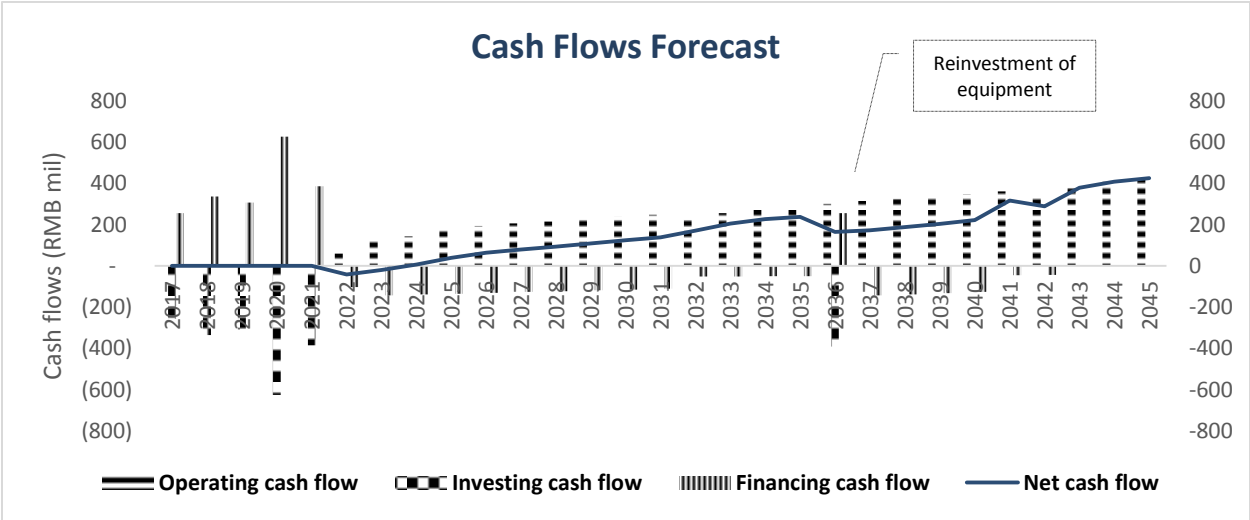
	2022	2023	2024	2025	2026	2030	2035	2040	2045	Total
Net revenue	108	159	190	238	267	338	413	507	623	9,321
Debt service	102	143	139	135	131	115	50	46	(0)	1,777
Repayment of IBRD loan with capitalized interest	-	44	44	44	44	44	44	44	-	886
Repayment of domestic loan capitalized interest	56	56	56	56	56	56	-	-	-	560
Interest payment for IBRD loan	15	15	14	13	12	9	6	2	(0)	167
Interest payment for domestic loan	31	28	25	21	18	5	0	0	0	165
Total OPEX and debt service	115	163	163	164	163	155	99	105	68	3,001
Surplus/(Deficit=Operating subsidy required)	(8)	(5)	27	74	103	183	314	402	555	6,320

20. Sensitivity Analysis. The results of the sensitivity analysis show that the Baiyang Logistics Park project will not be financially viable if IBRD funds were not available to finance a portion of project costs. In the absence of the IBRD loan and on the basis of commercial financing alone, the project will have a negative NPV of RMB39.81 million and a Project IRR of 7.8 percent, i.e., below the 8 percent discount rate; see Table 6 below. World Bank financing will contribute to closing the viability gap and to make the project financially sustainable.

Table 6: Results of Sensitivity Analysis

	Project IRR (%)	Project NPV (RMB million)
Financed through a combination of IBRD loan and domestic loan	8.1	11.42
Financed only through domestic loans (no IBRD loan)	7.8	(39.81)

21. Profitability. The results of the financial analysis show that the investment has a Project IRR of 8.1 percent and an NPV of RMB11.42 million. The Project IRR exceeds the 8 percent discount rate. The graph below presents cash flows from the Baiyang Logistics Park during the forecast period.



C. Fiscal Analysis

22. Fiscal assessment of YMG was carried out to assess: (i) the fiscal impact of the proposed project; (ii) availability of the required counterpart funds during project implementation; and (iii) debt-service capacity.

23. Socio-economic Development of Yichang Municipality. Yichang municipality has experienced rapid socio-economic development over the last few years. Gross domestic product (GDP) in Yichang increased from RMB155 billion in 2010 to RMB350 billion in 2015, at an

average annual growth rate of 18 percent. Yichang municipality forecasts that its GDP will increase on average by about 8 percent per year, and its investment in fixed assets will increase by about 12 percent per year from 2016 to 2021. Table 7 presents the main indicators of Yichang municipality's socio-economic development in the past six years, as well as the projected growth rate for the 2016–2021 period.

Table 7: Main Socio-economic Development Indicators for Yichang Municipality

Category	Unit	2010	2011	2012	2013	2014	2015	Forecast Average Growth Rate % (2016–2021)
Population	10,000	406	407	409	410	410	415	0.2
Urban population	10,000	202	211	219	224	230	232	
Rural population	10,000	204	196	190	186	180	183	
GDP	RMB billion	155	214	251	282	313	350	8
GDP per capita	RMB/person	38,181	52,673	61,517	68,846	76,369	85,336	
Urban per capita disposable income	RMB/person	14,282	16,451	20,510	20,934	25,025	24,000	8
Investment in fixed assets	RMB billion	95	119	162	211	247	800	12

Source: Project's Feasibility Study Report, February 2016 and the PMO

24. **Government Fiscal Status.** Yichang's fiscal revenue has increased over the last six years. Sources of local fiscal revenue are: (i) fiscal revenue, including tax and non-tax revenue; and (ii) non-fiscal revenue, including land-use rights. Local fiscal revenue increased from RMB13.10 billion in 2010 to RMB50.13 billion in 2015, at an average annual growth rate of 32 percent. It is expected that local fiscal revenue will increase by about 10 percent per year from 2016 to 2021.

25. Upper-government transfers/subsidies constitute an important source of Yichang's disposable funds. In 2010, Yichang municipality received about 48 percent of its disposable funds from central and provincial government transfers and subsidies, and by 2015 transfers and subsidies accounted for about 31 percent of disposable funds. Total transfers/subsidies are expected to increase by an average of 8 percent per year from 2016 to 2021.

26. Local fiscal expenditure has increased significantly, from RMB25.21 billion in 2010 to RMB73.04 billion in 2015, at an average annual growth rate of 21 percent per year. From 2010 to 2015, transportation expenditure accounted for about 3.8 to 5.1 percent of total fiscal expenditure. To support the growing economy, the municipality plans to invest more in transportation in the coming years. Transportation expenditure is expected to increase by about 10 percent per year from 2016 to 2021, and total fiscal expenditure is expected to increase by about 8 percent per year during this period. Table 8 presents the statistics of Yichang municipality's government fiscal revenue and expenditure for the 2010-2015, and the average annual growth rate from 2016-2021.

Table 8: Government Fiscal Revenue and Expenditure of Yichang Municipality (2010–2021)

	Unit	2010	2011	2012	2013	2014	2015	Forecasted Average Growth Rate % (2016–2021)
A. Total Fiscal Revenue	RMB bil	25.21	32.43	39.53	52.87	62.39	73.04	
Local fiscal revenue	RMB bil	13.10	17.66	21.66	35.13	41.14	50.13	
Annual growth rate of local fiscal revenue	%		35	23	62	17	22	10
Fiscal revenue	RMB bil	7.02	11.40	15.33	20.63	27.15	33.91	
Tax revenue	RMB bil	5.73	9.35	12.04	15.23	18.15	20.00	
Non-tax revenue	RMB bil	1.29	2.05	3.29	5.41	9.00	13.91	
Non-fiscal revenue	RMB bil	6.07	6.26	6.34	14.50	13.99	16.22	
Land-use right	RMB bil	5.66	5.75	5.66	13.57	13.04	15.81	
Other	RMB bil	0.41	0.51	0.68	0.93	0.95	0.41	
Upper-government transfers and subsidies	RMB bil	12.12	14.77	17.87	17.74	21.25	22.92	
Annual growth rate of government transfers and subsidies	%		22	21	-1	20	8	8
B. Total Fiscal Expenditure	RMB bil	25.21	32.43	39.53	52.87	62.39	73.04	
Annual growth rate of total fiscal expenditure	%		29	22	34	18	3	8
Public expenditures	RMB bil	5.56	8.32	9.79	16.43	18.40	19.29	
General fund expenditures	RMB bil	19.65	24.11	29.75	36.44	43.99	53.75	
Transportation	RMB bil	0.95	1.41	1.74	2.40	3.20	3.43	
Annual growth rate of transport expenditure	%		48	23	38	33	7	10

Source: Yichang Finance Bureau

27. **Government Indebtedness.** The YMG has incurred substantial debt to finance rapid urban and rural development in the past few years. In 2014, the government borrowed about RMB11.82 billion in new loans. According to data provided by the Yichang Finance Bureau, the accumulated government debt balances at the end of 2014 were RMB26.61 billion. Annual debt service to total fiscal revenue (including government transfers) in 2014 was 0.06. If the outstanding debt is compared to GDP, the indebtedness level was 0.08 in 2014. Table 9 presents Yichang government's debt position in regards to its total fiscal revenue and GDP. Yichang's Urban Development Investment Corporations' debt is not included due to lack of data.

Table 9: Yichang Government's Debt Profile (2010 to 2014)

	Unit	2010	2011	2012	2013	2014
Debt service to total fiscal revenue	Ratio	0.03	0.04	0.05	0.09	0.06

Outstanding debt at the end of year to GDP	Ratio	0.06	0.06	0.06	0.07	0.08
--	-------	------	------	------	------	------

28. **Project Financing Arrangements.** Annual project funding requirements were calculated based on the year-by-year investment plan. These requirements were then compared with expected fiscal revenue and total transportation investment from 2017 to 2021. The total requirement for government funding is expected to be relatively small: less than a percent of total fiscal revenue during that period. The proposed project will be a major investment in Yichang, and is expected to account for about 12 percent of total transportation investment during that period. However, the total requirement for YMG fiscal support for the project will be negligible at 0.2 percent of total fiscal revenue. Table 10 presents the year-by-year investment and financing plan.

Table 10: Project Funding Requirements

	Unit	2017	2018	2019	2020	2021	Total
Year-by-year investment plan	%	17	27	22	29	6	
Project investment	RMB mil	505	822	654	870	188	2,040
IBRD loan	RMB mil	226	368	293	390	84	1,361
Counterpart funding	RMB mil	279	454	361	480	104	1,678
YMG Fiscal budget	RMB mil	149	242	193	256	55	895
Commercial loan	RMB mil	130	212	169	224	49	783
Total fiscal revenue, including subsidies	RMB bil	87	96	105	114	125	527
Total transportation investment	RMB bil	4.2	4.6	5.0	5.5	6.1	25.4
Project investment/total fiscal revenue	%	0.6	0.9	0.6	0.8	0.2	0.6
Total project investment/total transportation investment	%	12	18	13	16	3	12
YMG fiscal support for project/total fiscal revenue	%	0.2	0.3	0.2	0.2	0.0	0.2

Source: Yichang Finance Bureau and the Bank's estimates