

Document of
The World Bank

Report No: ICR00003338

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD 75800-CHA)

ON A

LOAN

IN THE AMOUNT OF USD\$100 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

JIANGXI SHIHUTANG NAVIGATION AND HYDROPOWER COMPLEX PROJECT

December 18, 2014

Transport & ICT Global Practice
China Country Department
East Asia and Pacific Region

CURRENCY EQUIVALENTS

Currency = Renminbi (RMB)
Currency Unit = Yuan (Y)

Effective June 30, 2014
RMB1.00 = US\$0.1625
US\$1.00 = RMB6.15

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CDM-Clean Development Mechanism	JANA-Jiangxi Administration of Navigation Affairs
CER-Certified Emission Reductions	JPCD-Jiangxi Provincial Communication Department
CFU-Carbon Finance Unit of the World Bank	JPDRC-Jiangxi Provincial Development and Reform Commission
CPS-Country Partnership Strategy	JPFD-Jiangxi Provincial Finance Department
DO-Development Objectives	JPMO-Jiangxi Project Management Office
DOE-Designated Operational Entity	LIBOR-London inter-bank offered rate
DSP-Dam Safety Panel	O&M-Operation and Maintenance
EIA-Environment Impact Assessment	MOF-Ministry of Finance
EIRR-Economic Internal Rate of Return	MOT-Ministry of Transport
EMP-Environment Management Plan	NDRC-National Development and Reform Commission
FIRR-Financial Internal Rate of Return	PAD-Project Appraisal Document
GOC-The Government of China	PDO-Project's Development Objectives
IBRD-International Bank of Reconstruction and Development	QEA-Quality at Entry Assessment
ICR-Implementation Completion and Results	RAP-Resettlement Action Plan
IP-Implementation Progress	SCMS-Shihutang Complex Management Section
ISR-Implementation Status and Results	TA-Technical Assistance
IWT-Inland Waterway Transport	TEU-Twenty-Foot Equivalent Unit

Vice President:	Axel van Trotsenburg, EAPVP
Country Director:	Bert Hofman, EACCF
Senior GP Director:	Pierre Guislain, GTIDR
Practice Manager:	Michel Kerf, GTIDR
Project Team Leader:	Jiao Yuhui, GTIDR
ICR Team Leader:	Zhang Chuntai, GTIDR

PEOPLE’S REPUBLIC OF CHINA
Jiangxi Shihutang Navigation and Hydropower Complex Project

CONTENTS

A. Basic Information	i
B. Key Dates.....	i
C. Ratings Summary.....	i
D. Sector and Theme Codes	ii
E. Bank Staff	ii
F. Results Framework Analysis.....	ii
G. Ratings of Project Performance in ISRs	v
H. Restructuring (if any).....	v
I. Disbursement Profile.....	v
1. Project Context, Development Objectives and Design.....	1
2. Key Factors Affecting Implementation and Outcomes	4
3. Assessment of Outcomes	8
4. Assessment of Risk to Development Outcome.....	11
5. Assessment of Bank and Borrower Performance	12
6. Lessons Learned	14
7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners.....	15
Annex 1. Project Costs, Financing, and Loan Disbursement	17
Annex 2. Project Outputs	19
Annex 3. Economic and Financial Analysis.....	20
Annex 4. Bank Lending and Implementation Support/Supervision Processes	23
Annex 5. Summary of Borrower's ICR and/or Comments on Draft ICR	25
Annex 6. Comments of Cofinanciers and Other Partners/Stakeholders	28
Annex 7. List of Supporting Documents	29

MAP

A. Basic Information			
Country:	China	Project Name:	Jiangxi Shihutang Navigation and Hydropower Complex Project
Project ID:	P101988	L/C/TF Number(s):	IBRD-75800
ICR Date:	12/18/2014	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	P.R.CHINA
Original Total Commitment:	USD 100.00M	Disbursed Amount:	USD 100.00M
Revised Amount:	USD 100.00M		
Environmental Category: A			
Implementing Agencies: Jiangxi Administration of Navigation Affairs			
Cofinanciers and Other External Partners: N/A			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/23/2007	Effectiveness:	01/15/2009	01/15/2009
Appraisal:	02/13/2008	Restructuring(s):		11/15/2011
Approval:	09/25/2008	Mid-term Review:		
		Closing:	06/30/2014	06/30/2014

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	Low or Negligible
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Moderately Satisfactory	Overall Borrower Performance:	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	N/A
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	N/A
DO rating before Closing/Inactive status:	Moderately Satisfactory		

D. Sector and Theme Codes

	Original	Actual
Sector Code (as % of total Bank financing)		
Hydropower	40	40
Ports, waterways and shipping	60	60
Theme Code (as % of total Bank financing)		
Climate change	17	17
Infrastructure services for private sector development	33	33
Other rural development	33	33
Water resource management	17	17

E. Bank Staff

Positions	At ICR	At Approval
Vice President:	Axel van Trotsenburg	James W. Adams
Country Director:	Bert Hofman	David R. Dollar
Practice Manager	Michel Kerf	Ede Jorge Ijjasz-Vasquez
Project Team Leader:	Yuhui Jiao	Wenlai Zhang
ICR Primary Author:	Chuntai Zhang	
	Jian Xie	
	Dafei Huang	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The Project development objective (PDO) is to improve utilization of the Gan River for more reliable freight transport and for cleaner energy production through: (a) improving inland waterway transport capacity and service levels for primary and secondary industries in the Nanchang-Ganzhou corridor of the Gan River; and (b) generating renewable electricity to help meet rapidly growing demand for energy in the region.

Revised Project Development Objectives (as approved by original approving authority)

The PDO was not revised during implementation.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increase in volume of cargo along the Gan River (1,000 ton)			
Value quantitative or Qualitative)	85,000	131,600	131,600	285,500
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Surpassed Achievement (217%). This increase in cargo volume cannot be attributed entirely to the project.			
Indicator 2 :	Increase in volume of container along the Gan River (No. of TEU)			
Value quantitative or Qualitative)	50,625	237,000	237,000	244,000
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Fully Achieved (103%). This increase in container volume cannot be attributed entirely to the project.			
Indicator 3 :	Increase in volume of cargo passing the Shihutang ship lock during low water season during Oct to Dec. (1,000 ton)			
Value quantitative or Qualitative)	0	1,031	1,031	9
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Not Achieved. Due to the development of Xiajiang ship lock 90 km downstream from the Project on Gan River, IWT was temporarily suspended until May 2014. The full capacity will only be utilized after on-going improvements of Gan River is completed by 2020.			
Indicator 4 :	Reduction of carbon emission (1,000 ton)			
Value quantitative or Qualitative)	0	446.17	446.17	220
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Partially achieved (49%). The starting operation of the powerhouse was delayed. Power generated in 2013 was 284 GWh, which was 220,000 ton reduction of carbon emission. Power generation has begun to build-up. The target will be achieved in next few years.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increase in navigable time for 1,000-ton vessels on the 38km channel to be			

	upgraded (%)			
Value (quantitative or Qualitative)	27	95	95	95
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Fully achieved (100%)			
Indicator 2 :	Annual output of hydropower generation (GWh)			
Value (quantitative or Qualitative)	0	472.4	472.4	284
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Partially achieved (60%). Electricity generated in 2013 was less than anticipated, mainly due to delays in generator installation and operation caused by unexpected floods. The target will be achieved in the next few years.			
Indicator 3 :	Area of crop fields to be protected against 10-year flood. (ha)			
Value (quantitative or Qualitative)	0	4389	4389	4389
Date achieved	12/31/2007	12/31/2013	12/31/2013	12/31/2013
Comments (incl. % achievement)	Achieved (100%).			
Indicator 4 :	Study: Solutions to optimal operation of the Shihutang Complex are developed and adopted by JANA.			
Value (quantitative or Qualitative)	None	complete	complete	complete
Date achieved	12/31/2007	12/31/2012	12/31/2012	07/31/2013
Comments (incl. % achievement)	Achieved (100%)			
Indicator 5 :	Study: Measures identified to treat 17 km river channel downside Shihutang Dam are approved and accepted by JANA.			
Value (quantitative or Qualitative)	None	complete	complete	complete
Date achieved	12/31/2007	12/31/2010	12/31/2010	12/31/2009
Comments (incl. % achievement)	Achieved (100%)			
Indicator 6 :	Number of trainees who start adopting the learnt international and domestic experiences in the business.			
Value (quantitative or Qualitative)	0	182	182	593
Date achieved	12/31/2007	12/31/2012	12/31/2012	12/31/2013

Comments (incl. % achievement)	Target Exceeded (326%)
-----------------------------------	------------------------

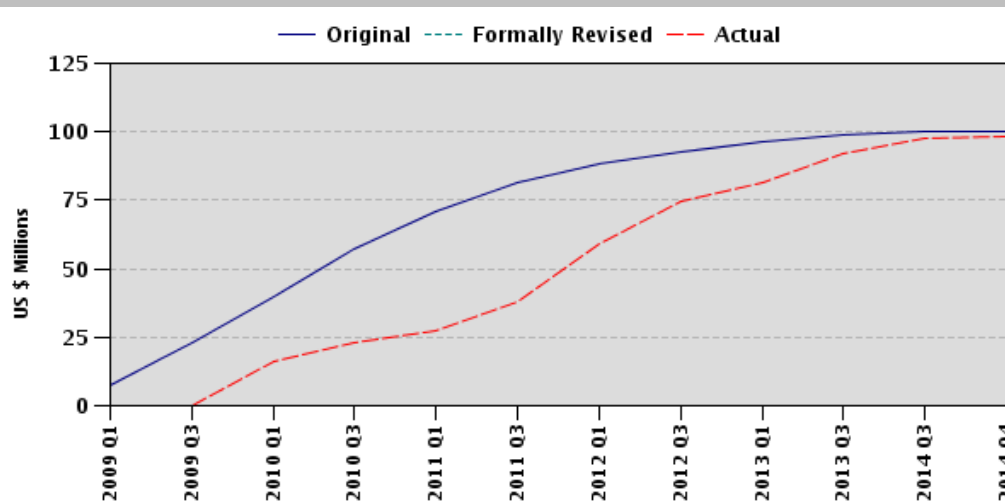
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	06/23/2009	Satisfactory	Satisfactory	5.50
2	12/22/2009	Satisfactory	Satisfactory	16.12
3	02/18/2011	Satisfactory	Satisfactory	34.24
4	01/01/2012	Satisfactory	Satisfactory	62.08
5	12/25/2012	Satisfactory	Satisfactory	81.69
6	06/26/2013	Satisfactory	Satisfactory	92.15
7	12/21/2013	Satisfactory	Satisfactory	92.15
8	06/24/2014	Moderately Satisfactory	Satisfactory	98.07

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
11/15/2011	N	S	S	59.08	To reduce financing costs by fully using the lower-interest-rate Bank loan through reallocation of loan proceeds and modified disbursement percentages.

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. China's inland waterway transport (IWT) network is the world's largest in terms of length and freight volume. Its higher standard waterways (Grade V and above) are approximately the same size as the combined commercially significant networks of the EU and the USA. In the period of 2001–2006, China's IWT traffic had grown at 9% annually to 1.16 billion tons, slightly higher than the combined IWT traffic tonnage of the USA and the EU. Although dominated by flows of bulk raw materials, China had been gradually developing a major IWT container operation with nearly eight million twenty-foot equivalent units (TEU) a year. Nevertheless, freight density (tons per waterway kilometer) and waterway utilization in China was lower than in the USA and in some of the EU countries.

2. China had about 37,000 kilometers of Grade VI-VII inland waterways that were capable of reliably carrying only small barges. But only a small fraction of the potential capacity of these waterways was used. Navigation infrastructure either had deficiencies or was of a low standard, which prevented the passage of larger and more efficient vessels that require higher standard waterways. Also, historically there had been low investment in IWT to improve these standards. Finally, institutional arrangements had made it difficult to take coordinated action to optimize IWT development on such waterways, as most of them were administered by provincial governments.

3. At appraisal, the Government of China (GOC) wished to increase the contribution of China's waterways to meet its transport needs. The Ministry of Transport (MOT) had issued a series of plans to direct and promote IWT development. GOC's strategy recognized the high energy efficiency and low greenhouse gas emissions associated with water transport, and the importance of conserving scarce land resources.

4. Jiangxi Province is a land-locked province in south-central China, which was one of the six economically underdeveloped central provinces supported by GOC's "Rise of Central China" initiative. Transport became one of the priorities in this development strategy. But the growth of IWT in the province lagged far behind the growth of road transport. The province therefore decided to pursue a more balanced transport strategy that gives more prominence to IWT. The priority for both MOT and the province was to improve navigation capacity on Gan River, particularly in its middle and lower reaches.

5. According to the Jiangxi Inland Waterway Navigation Development Plan (2006), the middle and lower reaches of Gan River along the Ganzhou – Nanchang corridor (450 km) would be upgraded to Grade III (allowing for year-round 1000 dwt vessels) by 2020. Six complexes are planned in the Ganzhou-Nanchang Corridor: Wanan, Taihe, Shihutang, Xiajiang, Yongtai and Longtoushan. Wanan Complex was already built in 1993. Taihe, Shihutang and Xiajiang complexes, which are in the middle reach of Gan River, are planned for completion by 2020. Xiajiang complex, located 90 km downstream of the Shihutang Project, was also in the preparation phase. The implementation date for the Xiajiang Dam was unknown when the Shihutang Complex Project was prepared. The feasibility study for the Yongtai (Xingan) complex is being conducted now. The section between Yongtai dam and Nanchang has been upgraded to Grade III.

6. Jiangxi Province had a significant demand for power supply because of its rapid economic growth at the time of appraisal. Hydropower generation, a clean and renewable power resource that reduces greenhouse gas emission, had been given a key role in scaling up installed capacity.

7. In response to a proposal from Jiangxi Province, GOC requested the Bank's financial and technical support in implementing the Shihutang Navigation and Hydropower Complex Project (the Project).¹ The Bank had provided financial and technical support to China's IWT development through five projects in six provinces over the previous 10 years, and was the leading international financial institution in China's IWT sub-sector. The Bank's unique expertise and experience, both international and local, could contribute to project design and implementation as well as to strengthen the institutional capacity of the IWT sub-sector in Jiangxi Province.

8. The Bank's involvement in Shihutang Project supported two of the five pillars of the Bank's FY06-10 China Country Partnership Strategy (CPS).² The Project addressed the pillar of "reducing poverty, inequality, and social exclusion" by providing more reliable IWT capacity, and by improving the flood-protection capacity for 4,368 hectares of farmland around the Project area. The rural poor would benefit from both improved IWT capacity and flood protection. The Project also addressed a second pillar of "managing resource scarcity and environmental challenges, through reducing air pollution, conserving water resources, and optimizing energy use", by generating renewable hydropower to meet the rapidly growing demand for energy in Jiangxi Province.

1.2 Original Project Development Objectives and Key Indicators

9. The project development objective (PDO) of the Project was to improve utilization of Gan River for more reliable freight transport and for cleaner energy production through: (a) improving inland waterway transport capacity and service levels for primary and secondary industries in the Nanchang – Ganzhou corridor of Gan River; and (b) generating renewable electricity to help meet rapidly growing demand for energy in the region.

10. Indicators used to measure achievement of the PDO included increased IWT cargo and traffic volume resulting from the improvement of IWT capacity and reduction of carbon emissions.

1.3 Revised PDO and Key Indicators, and Reasons/justification

11. The PDO and the key monitoring indicators were not revised during implementation.

1.4 Main Beneficiaries

12. The primary beneficiaries of the Project were: people and businesses engaged in IWT, farming communities in the vicinity of project area, local residents who took advantage of employment opportunities, enhanced flood protection and improved accessibility from the Project, and the project implementation agencies. The rural poor would benefit from improved IWT and jobs during project construction. Reduction of travel distance between Wanhe Town and Taihe County by 12 km would benefit about 150,000 people.

¹ The World Bank, August 14, 2008, *Project Appraisal Document on a Proposed Loan in the Amount of US\$100 million to the People's Republic of China for a Jiangxi Shihutang Navigation and Hydropower Complex Project*.

² The World Bank. May 2006. *Country Partnership Strategy for the People's Republic of China for the Period of FY2006-FY2010*. approved by the Board on May 23, 2006.

1.5 Original Components (as approved)

13. **Component A – Construction of Shihutang Complex** (Total US\$209.47 million, IBRD US\$91.59 million). The Shihutang Complex would be a single integrated infrastructure unit that would form a reservoir with a designed normal pool water elevation of 56.5 meters and pool storage of about 166.8 million cubic meters. The complex would consist of the main elements of 23 sets of dam sluice gates, a Grade III single ship lock to accommodate 1000-dwt vessels, a powerhouse with a capacity of 120 MW, a connection dam of 931 meters, and a dam crest access road of 937 meters.

14. **Component B – Flood Protection Works** (Total US\$80.11 million, entirely financed by counterpart funds). The flood protection works would consist of approximately 43 kilometers of dikes and 56 kilometers of diversion canals, about six sets of pumping stations, two sets of free drainage sluices and two sets of regulating sluices.

15. **Component C – Technical Assistance (TA)** (Total US\$1.02 million, IBRD US\$0.38 million). This component would consist of two studies and substantial training and study tours to build institutional and technical capacities of JANA and the Project Management Office for the Project (JPMO).

1.6 Revised Components

16. Project components were not revised during implementation.

1.7 Other Significant Changes

17. **Quantity changes.** The following changes were made during implementation:

- a) The dam crest access road was extended from the original 937 meters to 1,600 meters for the benefit of local people and vehicular traffic;
- b) Two sets of pumping stations were added at Wanhe and Jintan to increase flood protection capacity;
- c) In place of the Donggang diversion canal (proposed for flood control) a pump station was added in order to address land acquisition issues.

18. **Project restructuring.** In November 2011 the project was restructured to reallocate loan proceeds and to modify the disbursement percentage.³ Savings in Bank loan proceeds under the categories of Goods under Part A and Interest during Construction were reallocated to Category (1) – Works under Part A, and the disbursement percentage for Category (1) was also increased from 60% to 90%. This reallocation reduced the need for higher cost domestic commercial loans.⁴

19. **Project cost and financing.** Project cost at completion was RMB2,234.80 million (USD344.05 million equivalent), about 2.7% lower than the cost estimated at appraisal (RMB2,296.87 million). However, project cost in USD was about 7.9% higher than that at appraisal (USD319.01 million), as most project expenditures were incurred in RMB, while the USD depreciated against the RMB. Other reasons for cost variations included: (i) use of

³ The World Bank, November 15, 2011, *Office Memorandum – Restructuring Paper for “Jiangxi Shihutang Navigation and Hydropower Complex Project (Loan 7580-CN)”*.

⁴ The World Bank, November 15, 2011, Fax to the MOF, *China: Jiangxi Shihutang Navigation and Hydropower Complex Project (Loan 7580-CN) – Amendment to the Loan Agreement*.

competitive bidding under Bank Procurement Guidelines; and (ii) using pump stations at Wanhe and Jintan in place of the diversion channel.

20. At appraisal, the Project was expected to be financed by the central government (18.5%), local government (50.2%), and the IBRD loan (31.3%). The central government increased its financial support slightly from the original RMB425 million to RMB495 million and JANA obtained a commercial bank loan of RMB540 million to supplement counterpart funds. These contributed 24.1% of project costs and significantly lowered the direct local government contribution to 24.7%. Annex 1 provides a comparison of project costs at appraisal and at completion.

21. **Carbon Finance.** The Emission Reduction Purchase Agreement (ERPA) signed between the project entity and the Bank on January 15, 2010⁵ contracted the purchase of 200,000 Certified Emission Reductions (CER) generated by the Project by the end of 2013, of which at least 75% should have been generated by December 31, 2012. Because of the record-breaking flood in June 2010, civil works and generator installation were significantly delayed, and only 17,595 CERs were issued for the period January 1 to December 31, 2012.

22. The ERPA was revised and the contracted CER volume was reduced from 200,000 to 23,460 based on CERs generated in Year 2012. The second verification for the period of January 1, 2013 to September 30, 2013 resulted in 168,120 CERs being issued on September 12, 2014. However, as per the revised ERPA, only 5,865 CERs would be transferred.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

23. The Project is an integrated development to upgrade the inland waterway channel, generate renewable hydropower and enhance flood protection in the vicinity of the project. Experience in preparing and implementing the preceding five projects (three completed and two on-going) enabled the Project to be prepared in an efficient manner. The combination of the improvement of IWT navigation facility and the development of a hydropower station made the project financially sustainable.

24. **Lessons Learned.** The following lessons from the previous Bank-financed inland waterway projects in China and two recent hydro-electric projects were incorporated in the project design:

- a) Avoidance of redesigns and consequent delays by a thorough investigation of geotechnical conditions for the foundations of dams;
- b) Provision of expert guidance on design and operational issues of dams through the use of a Dam Safety Panel;
- c) Ensuring stronger coordination among various agencies involved in water resource management and collaboration with local municipal governments for land acquisition and resettlement.

⁵ January 15, 2010. *Spanish Carbon Fund, Clean Development Mechanism Certified Emission Reductions Purchase Agreement (Jiangxi Shihutang Hydropower Project)*, between Jiangxi Gan River shihutang Water Resource Multipurpose Development Company Limited and International Bank for Reconstruction and Development (as trustee of the Spanish Carbon Fund).

- d) Careful demand analysis and traffic forecasts to evaluate the scope and expected benefits of the project.

25. **Analysis of Alternatives.** Several alternatives were considered in arriving at the design of the Shihutang Complex. These included: alternative analysis to determine the dam site and axis, complex configuration, design of normal pool level, and installed capacity for the hydropower station. Detailed geological and hydrological surveys were conducted during the feasibility study and preliminary design to facilitate a reliable design. The structural safety and durability of the dam and flood protection works were priorities in the design.

26. **Risks.** The following risks were identified:

- a) Construction-related risks, including procurement delays and large variations;
- b) Failure to comply with Bank social and environment safeguards;
- c) Weak institutional capacity;
- d) Weak financial management.

27. The following measures were proposed to address the identified risks: enhanced engineering designs, based on geotechnical/hydrological surveys; a realistic procurement plan and the involvement of a tendering agency; independent external monitoring of safeguard compliance; appointment of a Dam Safety Panel; training of PMO staff; and the adoption of a financial management manual, acceptable to the Bank.

28. **Safeguards.** The project was assessed as Environmental Category A due to the magnitude of the issues involved, the coverage area, and the nature of the proposed investments. It triggered the following Bank safeguard policies: Involuntary Resettlement, OP4.12; Environmental Assessment, OP4.01; Natural Habitats, OP4.04; Physical Cultural Resources, OP4.11; and Safety of Dams, OP 4.37. A Resettlement Action Plan, acceptable to the Bank, was prepared to guide the implementation of land acquisition and resettlement. An EIA report was prepared to assess environmental impacts and develop mitigation measures to avoid, minimize, mitigate and compensate the identified adverse impacts during the planning, construction and operational stages. Two stand-alone EMPs were developed (one for the dam site and the other for the flood protection area), which detail the environmental management organizations and responsibilities, mitigation measures, capacity building plans, monitoring plans and budgets. A Dam Safety Panel was appointed to provide professional review and advice during the design and implementation of the dam. The project safeguard documents – RAP, EIA/EMPs - complied with Bank safeguard policy requirements, including consultation and disclosure.

29. **Quality at entry.** Project preparation and design were of good quality. There was no Quality at Entry Assessment (QEA) for this project by the Quality Assessment Group.

2.2 Implementation

30. The project was completed satisfactorily, on schedule, and under budget by JPMO. The full amount of loan of US\$100 million was disbursed. An appropriate institutional arrangement for implementing the project with the PMO located in JANA, comprised of seasoned technical and management staff, as well as guidance provided by the Dam Safety Panel were among the positive aspects affecting project implementation.

31. Key factors that affected project implementation negatively included: major floods in June 2010 resulted in the project falling four months behind schedule by 2012 (including the installation of the first and second generator units), while the Spring floods in March 2012 delayed power generation and the implementation of flood protection works; unanticipated

difficulties in land acquisition for the diversion canal at some locations resulted in the project design having to be changed to replace the diversion canal by a pumping station; and some diversion channels had to be re-routed to avoid areas with unstable soil area as this was not discovered during the preliminary design.

2.3 Monitoring and Evaluation Design, Implementation and Utilization

32. **Monitoring and Evaluation Design.** The Results Framework in the PAD included: three project outcome indicators to assess the benefits of IWT channel improvement and contribution to Climate Change by generating renewable hydropower; and four intermediate indicators to evaluate Project outputs: increased navigable time in the upgraded 38 km channel for 1000-ton vessels; annual output from the Project hydropower station; area of farmland protected against 10-year floods; and the number of completed Project studies and the number of people receiving trainings under the project.

33. The results of two of the four PDO Outcome indicators (increase in volume of cargo along the Gan River and increase in volume of container traffic along the Gan River) cannot be attributed entirely to the Project. This is borne out by the fact that the end-of-project targets for these two indicators were exceeded, while less than 1% of the end-of-project target for a third indicator (increase in cargo passing through the Shihutang ship lock during the low water season) - which could be considered to have a stronger connection with project outcomes – was achieved. In the case of this indicator, the very poor end-of-project achievement is due to the failure to take account of the construction plans of the Xiajiang Complex, downstream of the Project, and the gradual development strategy for Gan River inland waterway transport during the design of the Results Framework.

34. **Monitoring and Evaluation Implementation.** Overall, the Project M&E system was implemented as designed. JPMO collected data from the relevant authorities semi-annually/annually, analyzed them, and incorporated the results in the semi-annual project progress reports. Unfortunately, the weaknesses in the M&E design do not appear to have been spotted and rectified during Project implementation.

35. **Monitoring and Evaluation Utilization.** The results of M&E system implementation - review of semi-annual progress reports, the review of audited annual financial statements, and at least two supervision missions a year - were used to assess progress during Project implementation.

2.4 Safeguard and Fiduciary Compliance

36. **Social safeguards.** As discussed in Section 2.1, the Project triggered OP 4.12 on Involuntary Resettlement and a RAP, acceptable to the Bank, was prepared. Upon completion, the Project had permanently acquired 654.9 ha (appraisal estimate was 615 ha) and temporarily acquired 70.6 ha (appraisal estimate 330 ha). In all, 141 households comprising 515 people were relocated (appraisal estimate 169 households comprising 597 people). Special financial and physical assistance were provided to the vulnerable households identified. Some farmland was elevated to reduce inundation. Some activities were behind the schedule, especially the construction of the Huangkeng resettlement site and land acquisition for the Dongmen Canal in the Wanhe protection area. Land acquisition for the Donggang diversion canal also experienced difficulties, which led to a revision in the engineering design.

37. Social safeguards implementation was monitored by JPMO and related counties and the monitoring results were incorporated in the semi-annual project progress reports. An independent external agency monitored resettlement activities every six months and provided comprehensive

reports, which confirmed that Project resettlement complied with Bank requirements. Implementation of RAP is considered Moderately Satisfactory because difficulties in land acquisition impacted progress of Project implementation.

38. **Environment safeguards.** As discussed in Section 2.1, the Project was classified as Category A (Full Assessment) and triggered four environmental safeguards policies. Environmental safeguards documents, acceptable to the Bank, were prepared, comprising: (a) EIA report; (b) Environmental Management Plan (EMP) for Flood Control Areas; (c) Environmental Management Plan for Navigation/Hydro Complex; and (d) EA Executive Summary. JPMO, with the assistance of an external environmental monitoring consultant, closely supervised implementation of the EMP. Construction management and post-construction rehabilitation were managed well. In particular, the PMO made commendable efforts in the protection of natural habitats, through further survey and protection efforts for camphor trees, construction of fish channel and reproduction facilities, and restoration/enhancement of fish habitats. These efforts constitute good practice and will be disseminated across the province and the country.

39. Civil works contracts included items related to environmental protection and water resources conservation. JPMO retained an external environmental monitoring consultant and an external water and soil preservation consultant to monitor environmental safeguard compliance. Environment monitoring reports were included in the semi-annual project progress reports. The monitoring reports showed that the mitigation measures were properly implemented and no significant residual impacts remained.

40. The Dam Safety Panel contributed significantly to ensuring compliance with the Dam Safety safeguard policy. Implementation of the environmental safeguards is considered Satisfactory.

41. **Financial management.** Project financial management risk was assessed at appraisal to be modest. During implementation financial planning and record keeping was satisfactory. Counterpart funds were allocated to the Project in a timely manner and the Bank loan was disbursed smoothly. JPMO submitted interim financial reports in accordance with the legal covenants. Project financial audit reports for 2009–2013 were issued without qualifications and were submitted to the World Bank in a timely manner, and were acceptable to the Bank. Overall, project financial management is rated satisfactory.

42. **Procurement and contract management.** Project procurement was carried out in accordance with the World Bank's "*Guidelines: Procurement under IBRD Loans and IDA Credits*" dated May 2004 and revised in October 2006, and "*Guidelines: Selection and Employment of Consultants by World Bank Borrowers*" dated May 2004 and revised in October 2006. A procurement agent was recruited to assist JPMO on procurement activities. The procurement plan was updated several times based on implementation needs and these were approved by the Bank. JPCD empowered JPMO to approve variations and claims below RMB5 million. JPTD and JPFDD approved advance payments on materials available on site to help contractors maintain a healthy cash flow during construction peaks. Upon completion, a total of 35 contract packages were procured, including 8 for civil works, 21 for goods, and 6 for consulting services. Of these contracts, three goods contracts and two civil works contracts were ICB contracts, and two consulting services contracts were subject to international competition. Procurement under the Project is rated satisfactory.

2.5 Post-completion Operation/Next Phase

43. The completed Project is operated and maintained by the Jiangxi Port Investment Company, which has sufficient experienced personnel to operate and maintain these facilities. It has prepared and adopted an Operations and Maintenance Plan and an Emergency Preparedness Plan in compliance with the Bank policy on Dam Safety. A complete set of monitoring equipment has been installed and a professional institute has been assigned to conduct routine dam safety monitoring. The Shihutang Complex generated 284 GWh in 2013, and is expected to generate 400 GWh in 2014. It will reach an annual average amount of 472.4 GWh in the next few years. The power generation provides reliable and stable revenue to cover the expense for normal operation and maintenance of the Complex. Furthermore, the revenue from hydropower generation allows the free usage of ship lock.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Rating: **High**

44. **Objective- Rated High.** The PDO was consistent with China's development priorities at the time of appraisal and remains highly relevant to the themes of the Bank Group's FY2013–2016 CPS for China,⁶ including: (i) supporting greener growth; (ii) promoting more inclusive development; and (iii) advancing mutually beneficial relations with the world. IWT is the least energy intensive, most cost effective, and lowest contributor to greenhouse gases of all transport modes. IWT is also essential to the promotion of greater efficiency, productivity and competitiveness in the use of inland water resources in the project area.

45. **Design – Rated High.** Project design, comprising three components – an integrated navigation and hydropower complex at Shihutang, flood protection works, and technical assistance – built on the experience of earlier IWT projects financed by the Bank in China and contribute to the achievement of the PDO. The project design is considered to be an appropriate approach to support greener growth and promote more inclusive development, which are two themes of the Bank Group's FY 2013-2016 CPS for China. Project design also addressed the priority of Jiangxi Province MoT to improve and facilitate navigation capacity in the middle and lower reaches of Gan River.

46. **Implementation – Rated High.** Project implementation upgraded 38 kilometers of inland waterway in the middle reaches of Gan River to Grade III and installed renewable power generation of 120 MW from a hydropower station. These achievements are consistent with the Bank Group CPS and Government priorities.

3.2 Achievement of Project Development Objectives

Rating: **Modest**

47. The Project had two objectives: (a) Improving inland waterway transport capacity and service levels for primary and secondary industries in the Nanchang-Ganzhou corridor of the Gan

⁶ The World Bank. October 2012. *Country Partnership Strategy for the People's Republic of China for the Period of FY2013-FY2016*. Report No. 67566-CN.

River; and (b) generating renewable electricity to help meet the rapidly growing demand for energy in the region.

48. Improving inland waterway transport capacity and service levels for primary and secondary industries in the Nanchang-Ganzhou corridor of the Gan River - Modest.

49. The Project directly improved the capacity of the 38 km IWT channel by upgrading it from Grade V to Grade III, which substantially increased the navigable time for 1000-ton vessels from 27% to the end-of-project target of 95% of the time. The improved IWT capacity and service level at Shihutang makes IWT a competitive mode for bulk and low-value cargo (e.g., agriculture products and construction material) along Gan River.

50. Of the Project's three outcome indicators that are meant to assess the achievement of this objective, two were exceeded: increase in volume of cargo along the Gan River (217% achieved) and increase in volume of containers along the Gan River (103% achieved). However, as discussed in Section 2.3 under M&E Design, the results of these two indicators cannot be attributed entirely to the Project. On the other hand, less than 1% of the end-of-project target increase in volume of cargo passing the Shihutang ship lock during the low water season during October to December (the third Outcome indicator to assess the achievement of this objective) was achieved, as IWT in the Gan River was temporarily suspended near Shihutang due to the development of the Xiajiang ship lock, downstream of Shihutang. The full capacity of the Shihutang ship lock is expected to be fully utilized only by 2020.

51. Therefore, the civil works envisaged under the project have been successfully completed and they will improve transport capacity as expected, but the full realization of those benefits is delayed due to the development of Xiajiang ship lock. In view of this, achievement of this objective is rated as Modest.

52. Generating renewable electricity to help meet the rapidly growing demand for energy in the region - Substantial. Because of unanticipated floods, which delayed hydropower generation from Project investments, the Project only generated 284 GWH, 60% of the output target of 472 GWH in 2013. The estimated electricity generation for 2014 (based on generation of 350 GWH in the first ten months) is 400 GWH, i.e., 85% of end-of project target. The generated electricity has been successfully networked with the regional electricity grid to effectively support the rapidly growing demand for energy and significantly alleviate the status of insufficient power supply in the region. Annual power generation is expected to increase 5% each year between 2016 and 2020 and will reach designed capacity before 2020. Achievement of this objective is therefore rated as Substantial.

53. Other significant Project benefits. The Flood Protection Works component significantly improved 10-year flood protection for nearly 4,400 hectares in the project area (100% of end-of-project target). The dam crest road has shortened travel distance between Wanhe Town and Taihe County by about 12 kilometers, directly benefiting about 50,000 pedestrians and vehicle users. The Project also contributed to the reduction of carbon emissions by 220 tons in 2013, although because of the delay in power generation start up, this constituted only 49% of the end-of-project target.

3.3 Efficiency

Rating: **Substantial**

54. Economic re-evaluation. Cost-benefit analysis conducted at appraisal estimated an EIRR of 14.9%. Using the same valuation methods and the same assumptions of travel cost

savings per ton, as well as the economic benefits of electricity generated per KWh as presented in the PAD, the EIRR of the Project at completion is 12.9%. The lower EIRR is mainly due to the lower waterway traffic in the Shihutang section and lower electricity generated than projected at appraisal. The reason for lower waterway traffic volume was due to the constructions of the downstream Xiajiang Complex, which significantly blocked the river channel for navigation. The lower power generation at completion is due to the delayed startup of power generation, discussed earlier. Nevertheless, the EIRR of 12.9% is acceptable and the project's economic objectives have largely been achieved.

55. **Financial re-evaluation.** Financial re-evaluation was carried out based on incurred investment costs, incurred operations and maintenance (O&M) costs, and revenue generated, as well as the corresponding projections provided by JANA. The recalculated FIRR was 3.5% before tax and 1.6% after tax; these compare favorably with the appraisal estimate of 0.2%. The higher FIRR is mainly due to lower investment costs and higher electricity tariffs. (See Annex 3 for details of the economic and financial re-evaluations.)

3.4 Justification of Overall Outcome Rating

Rating: **Moderately Satisfactory**

56. Taking into account the ratings for relevance (high), achievement of PDO (moderately satisfactory), and efficiency (substantial), Project outcome is rated moderately satisfactory.

Item	Rating
Relevance	High
Relevance of objective	High
Relevance of design	High
Relevance of implementation	High
Achievements	Modest
Efficiency	Substantial
Overall	Moderately Satisfactory

3.5 Overarching Themes, Other Outcomes and Impacts (Not yet reviewed from this point.)

(a) Poverty Impacts, Gender Aspects, and Social Development

57. The social impact survey and assessment carried out during project preparation concluded that: (i) no ethnic minority community/group was living in the project area; (ii) the Project does not trigger the Bank's OP 4.10 on Indigenous People; (iii) women accounted for approximately 50% of the population, but there were no special gender issues in the project area; (iv) about 2% of households were vulnerable because of age, illness, or disability; and (v) there would be both adverse and positive impacts on fishery. Some measurements were proposed to mitigate the potential negative impacts and assist the vulnerable people, e.g., restoration of their households and livelihoods, and building a fish pass area. During implementation, these measures were implemented by the JPMO, including the construction of two collective resettlement sites, special financial and physical assistance to identified vulnerable households, and recovery plan and training for farmers who lost land.

(b) Institutional Change/Strengthening

58. The Project has substantially strengthened the institutional capacity of JANA as a result of implementing the project and the project's capacity building programs. Advanced concepts,

experience, and techniques in implementing a complex hydropower project were brought to JANA, especially to JPMO staff, through training, study tours, and studies. The result of the downstream waterway treatment study was applied to the ship lock design and power station design in the early stage of the Project. The study on reservoir operation optimization provided technical support for future reservoir management and the operation plan to optimize power station operation and IWT navigation operation. Training provided to JANA and JPMO staff under the project enhanced their capacity for procurement, safeguards monitoring and mitigation, navigation channel maintenance and management, and hydropower station management. The improved capacity benefited day-to-day project implementation and future operation of the ship lock, navigation channel and power station, as well as environmental management in the post-completion phase. The project supported the development of management and operational procedures, regulations, and manuals, and their subsequent use has increased (and will continue to increase) JANA's capacity in IWT development.

(c) **Other Unintended Outcomes and Impacts**

59. Not applicable.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

60. No beneficiary surveys or stakeholder workshops were conducted during and after project implementation.

4. Assessment of Risk to Development Outcome

Rating: **Low**

61. The risk to development outcome is negligible to low.

62. **IWT sub-sector development.** Central and project provincial governments' commitment to the Project is strong. Economic conditions in the country and in Jiangxi Province remain robust. Traffic along Gan River has exceeded expectations, reflecting the rapid economic growth that the region has enjoyed but also improvement in service and reduction in transport costs. Attention is being paid to the maintenance of the hydropower and IWT facilities. Demand for IWT and renewable power generation remains high. The risk to achieving the development outcome of the Project is negligible.

63. **Shihutang Complex.** There are clear institutional and financial arrangements for the operation and maintenance of the Shihutang Complex. Despite delays in starting operation, electricity generation has steadily built up and will reach planned output capacity in the next few years to meet energy demand and support green development in the province. The dam crest access road has provided a convenient transport facility for the local people and vehicles. Once other ship locks along Gan River are completed by 2020, traffic passing through the Shihutang ship-lock will increase substantially and reach planned levels. The risk of the Shihutang Complex not functioning as envisaged is low.

64. **Flood protection works.** Flood protection works constructed under the Project, including dikes, diversion canals, pumping stations, and drainage sluices, are operated and maintained by JANA with clear institutional and financial arrangements. Maintenance of these flood protection facilities is adequate to keep them in good condition. Taihe County is managing the construction of the pumping station at Donggang, with financial support from JANA and it will be operational before the next flood season. The risk of the flood protection works failing to operate as intended is low.

65. **Capacity building.** Two studies under the Project supported project implementation and operation, as well as the downstream development of Shihutang Complex. The Project supported substantial domestic and overseas training and study tours for staff of JANA and local governments. Participants of training programs and study tours have increased their knowledge of project management, IWT development, hydropower complex operation, dam safety, etc. The risk of inadequate capacity to operate and maintain the Shihutang Complex in a satisfactory manner is considered low.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Moderately Satisfactory**

66. The Bank confirmed that the Shihutang Navigation and Hydropower Complex was strategically relevant to Government's and Jiangxi's plans to develop inland waterway transport in the lower and middle reaches of the Gan River and to meet energy demand in Jiangxi through hydropower, a clean and renewable power source, as well as being relevant to the key pillars of the Bank's China Country Partnership Strategy for FY06-10. The Bank ensured that lessons of previous projects in the IWT sector in China were incorporated in the design of the Shihutang Project. During project preparation and appraisal the Bank ensured that: various alternatives were analyzed; technical, financial, and economic analyses were carried out as per Bank policies; implementation arrangements for the project were appropriate; project agencies addressed environmental and social aspects of the project, including the preparation of the required documents (EAs/EMPs, RAPs/RPF) in compliance with Government and Bank requirements; appropriate procurement and financial management arrangements that meet Bank requirements were put in place; and risks were identified and appropriate mitigation measures were incorporated in the project design. During project preparation the Bank provided substantial training to project staff on Bank project financial management and procurement procedures, as well as environmental and social safeguards.

67. The project was prepared in a fairly efficient manner, with less than a year between concept review and appraisal, and 18 months to Board. The Bank preparation and appraisal task team comprised Bank staff and consultants with the appropriate mix of technical, economic, financial, fiduciary and safeguards skills. Comments provided by Peer Reviewers at various stages were taken into account in the design of the project.

68. Weak areas of project appraisal/quality at entry included: elaborate description of the PDO, of which the front end was too broad and beyond the scope of the project; weak M&E design, in particular the selection of two outcome indicators where achievements would not be clearly attributable to the project; failure to take into account the impact of the construction of the Xiajiang Dam, downstream of Shihutang, on the project; and a tight five year implementation schedule, which did not anticipate and allow for delays due to flooding (which materialized during implementation)..

69. Taking the above factors into account, on balance, the Bank's performance in ensuring quality at entry is rated moderately *satisfactory*.

(b) Quality of Supervision

Rating: **Moderately Satisfactory**

70. The Bank provided implementation support to the project on a regular basis through: (i) semi-annual missions with the required expertise and follow-up technical missions; (ii) review of semiannual project progress reports, annual financial audit reports, and external safeguards monitoring reports; (iii) monitoring results indicators; and (iv) provision of training / workshops on Bank fiduciary and safeguards policies and procedures. The Bank monitored compliance with safeguards and fiduciary policies closely and provided guidance on the proper implementation of the EMP and the RAP. The Bank provided guidance to JPMO to improve the quality of bidding documents.

71. The Bank acceded to the Government's request to restructure the project in order to reduce the financing costs (of borrowing from a commercial bank to counterpart funding requirements) by fully utilizing the Bank loan through reallocation of loan proceeds. The Bank confirmed that capacity building activities were completed satisfactorily to ensure that the Shihutang complex would be operated in a sustainable manner. The Bank provided additional support on the carbon finance activities of the Project.

72. While the Bank paid adequate attention to development impact, it should have paid greater attention to the appropriateness of the PDO and the project's Result's Framework. In particular the PDO and the Results Framework should have been revised through a Level 1 restructuring. In addition, the Bank should have counselled against the bidding and award of civil works contracts for the construction of the dam, power plant, and ship lock on the basis of technical specifications and bill of quantities based on preliminary design. This caused substantial work variations during contract implementation and the award prices of these contracts were significantly exceeded.

73. The Bank prepared and archived implementation status reports (ISRs) at the required intervals. The ISRs were of good quality and the ratings for development objectives and implementation progress (as well as other ratings) were candid, and were based on project status and likelihood of achieving project objectives at the time of rating. The final ISR downgraded the DO rating to moderately satisfactory because some of the project's PDO indicator targets would only be achieved after a delay.

74. On balance, the quality of Bank supervision is rated *moderately satisfactory*.

(c) Justification of Rating for Overall Bank Performance

Rating: **Moderately Satisfactory**

75. The overall Bank performance is rated *moderately satisfactory* based on the ratings for Quality at Entry and Supervision.

5.2 Borrower Performance

(a) Government Performance

Rating: **Satisfactory**

76. Government performance was satisfactory, based on the level of its commitment to the Project. Ministry of Transport (MoT) respectively provided technical and financial support to the Project. MoT increased the central government's financial contribution to the project during implementation and agreed to the Province's request for restructuring the loan.

77. Jiangxi province gave the project a high level of attention. Jiangxi Transportation Department, Jiangxi DRC, Jiangxi Provincial Financial Department, and Jiangxi Administration of Navigation Affairs provided adequate support for project preparation and implementation. There was effective coordination between JPMO and the municipal government to address land acquisition and resettlement issues. At the municipal level, the county government provided efficient support by assigning dedicated staff to assist JPMO with safeguards monitoring, surveys, and implementation of EMP and RAP.

(b) Implementing Agency or Agencies Performance

Rating: **Satisfactory**

78. This major infrastructure Project was completed before the Loan closing date and 100% of the Bank Loan were disbursed. JPMO was highly motivated and worked proactively on all technical and management tasks, complied with Bank safeguard policies, coordinated with local governments, prepared progress reports, and supervised project implementation. After the significant flood in 2010, JPMO worked closely with the contractors to bring project implementation back on schedule and under budget. JPMO and the supervision engineers established an internal quality control mechanism during the project implementation. As a result, the quality of construction was very good.

79. The Project experienced a shortfall in counterpart funds, which was addressed through commercial bank loans and restructuring of the World Bank loan. There were some unanticipated delays in land acquisition and resettlement, which affected project progress during the implementation. In place of the Donggang diversion canal (proposed for flood control) which had land acquisition issues, a pump station was added.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Satisfactory**

80. The overall performance of the Borrower is rated *satisfactory* based on the satisfactory ratings for Government performance and Implementing Agency performance.

6. Lessons Learned

81. The principal lessons from the project are summarized below.

82. **Combination of ship lock and hydropower station development.** The combination of a hydropower station with ship lock development makes the project financially viable. As Jiangxi Province does not charge ships for use of the ship lock, revenue from power generation provides financial support for the operations and maintenance of the ship lock and the dam and servicing the debt. Free use of the ship lock is expected to attract more low value commodities to IWT from other transport modes.

83. **Importance of good M&E design.** The absence of a well-designed M&E complicates the assessment of the achievement of the PDO. This reinforces the message of Bank Guidelines on the importance of a well-designed M&E. In addition, the opportunity to rectify a weak M&E through restructuring should not be missed.

84. **Impact of other projects in the overall program.** The impact of the construction of the Xiajiang complex on the end-of-project achievements of the Bank project highlights the need to

take into account the status and potential impacts of other projects which are being implemented contemporaneously with a proposed Bank project as part of an overall program. In such cases, end-of-project targets need to be estimated taking into account of the impact of such other projects.

85. **Need for design flexibility to address unanticipated land acquisition and resettlement issues.** Preparation of a RAP acceptable to the Bank is an important, but not sufficient condition for successful project implementation. Project design should be flexible to allow for unanticipated land acquisition and resettlement issues, as was the case with the difficulties in land acquisition for the Donggang diversion canal.

86. **Need for realistic implementation schedule for power generation investments.** Power generation investments can be significantly impacted by slow progress of civil works and equipment installation. Therefore, a more flexible power generation schedule should be prepared. In addition, estimates of power generation should allow for a phased build up to full capacity.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

87. **Lowest price bidding.** While applying the Bank's procurement policy and procedure of lowest price bidding, bidding prices for most of the contract packages were much lower than estimated. Some of them were lower than reasonable price. This might cause problems in the project implementation, like delay in commencement, low construction quality, etc. It is suggested that the World Bank might conduct related study to look for effective and efficient procurement approach, which may both be compliant with World Bank policy and also avoid the problem above.

88. **Bank's comment:** Current Bank procurement policy is to award the contract to the lowest evaluated substantially responsive bidder who also meets the minimum qualification requirements stipulated in the bidding documents. Price is not the only factor to be considered in bid evaluation and bidding documents may also specify the relevant factors in addition to price to be considered in bid evaluation and the manner in which the factors will be applied for the purpose of determining the lowest evaluated bid (see paragraph 2.52 of the Procurement Guidelines). In order to ensure quality, the technical specifications, standards as well as the quality assurance mechanisms including testing, inspections and acceptance should be carefully drafted in the bidding and contract documents and enforced during contract implementation. The minimum qualification requirements should also be set so as to ensure that the bidder awarded the contract has the requisite experience and performance record and technical and financial capacity to successfully execute the contract. Competitive procurement under Bank Procurement Guidelines has generally resulted in better prices in Bank projects. The Bank's proposed new framework for procurement emphasizes market analysis, procurement strategy and Value-for Money decision-making and life cycle cost considerations in contract award decisions.

89. **Depreciation of foreign currency.** In the project implementation period, the US\$ against RMB had significant depreciation, which led to shortage of project funds. For solving this problem, the government and JANA made special efforts to increase the fiscal allocation and obtain commercial loans from a domestic bank. It is suggested that the World Bank might establish a special fund/loan for supplementing funding shortages caused by foreign currency depreciation.

90. **Bank's comment:** Depreciation of the US dollar against the Borrower's currency is an unusual case. It is noted that the issue was addressed through increased counterpart contribution and partly through reallocation of loan proceeds and adjustment to disbursement percentages. The option of additional financing was also available, but the Borrower did not choose to exercise it.

(b) Cofinanciers

Not applicable.

(c) Other partners and stakeholders

Not applicable.

Annex 1 Project Costs, Financing, and Loan Disbursement

(a) Cost Comparison (USD million)

Component and/or Activity	At Appraisal			Actual			Increase/ Decrease
	Counterpart	IBRD	Total	Counterpart	IBRD	Total	
A. Construction of Shihutang Complex	117.88	91.59	209.47	100.57	97.69	198.26	-5.3%
1. Civil Works	49.26	41.19	90.45	42.49	63.24	105.73	16.9%
2. M&E and Goods	44.65	50.40	95.05	34.29	34.45	68.74	-27.7%
3. Land Acquisition and Resettlement	2.13		2.13	2.17		2.17	2.0%
4. Design, Supervision and Consulting	13.65		13.65	9.51		9.51	-30.4%
5. Others	8.19		8.19	12.11		12.11	47.9%
B. Flood Protection Works	80.11		80.11	130.95		130.95	63.5%
1. Civil Works	44.33		44.33	93.57		93.57	111.1%
2. M&E and Goods	2.14		2.14	3.62		3.62	69.1%
3. Land Acquisition and Resettlement	28.65		28.65	28.87		28.87	0.8%
4. Design, Supervision and Consulting	3.30		3.30	2.23		2.23	-32.4%
5. Others	1.69		1.69	2.67		2.67	57.9%
C. Technical Assistant (TA)	0.64	0.38	1.02	0.65	0.38	1.03	0.6%
1. TA Studies	0.47		0.47	0.48		0.48	1.5%
- Optimization of Reservoir Operation	0.12		0.12	0.11		0.11	-9.8%
- Technology for Waterway Treatment	0.35		0.35	0.37		0.37	5.3%
2. Capacity Building - Training and Study Tour	0.17	0.38	0.55	0.17	0.38	0.55	-0.2%
Total Baseline Cost	198.64	91.97	290.61	232.17	98.07	330.24	13.6%
Physical & Price Contingencies	12.99		12.99				
Total Project Cost	211.63	91.97	303.60	232.17	98.07	330.24	8.8%
Interest during construction	7.37	7.78	15.15	11.88	1.68	13.56	-10.5%
Front-end Fee		0.25	0.25		0.25	0.25	0.0%
Total Project Cost	219.00	100.00	319.00	244.05	100.00	344.05	7.9%

Note: The actual costs in USD were converted from the annual costs in RMB by using the annual average exchange rates in the project period.

Source: The Project Appraisal Document. The Project Management Office

(b) Project Financing (USD million)

Source	At Appraisal		Actual	
	Amount	%	Amount	%
Central Government	59.00	18.5%	76.10	22.1%
IBRD Loan	100.00	31.3%	100.00	29.1%
Local Government	160.00	50.2%	84.92	24.7%
Domestic Bank Loan		0.0%	83.03	24.1%
Total	319.00	100.0%	344.05	100.0%

Source: The Project Appraisal Document. The Project Management Office

(c) Loan Proceeds Allocation and Disbursement (USD)

Category	Category Description	Original Allocation	Revised Allocation	Disbursed	
				USD	%
-1	Works under Part A	41,190,000	58,190,000	63,238,837.57	100%
-2	Goods under Part A	50,400,000	38,400,000	34,454,223.06	100%
-3	CS and Training under Part C	380,000	380,000	380,000	100%
-4	CHARGES	7,780,000	2,780,000	1,676,939.37	100%
FEF	FRONT END FEE	250,000	250,000	250,000	100%
Totals		100,000,000	100,000,000	100,000,000	100%

Note: The loan reallocation was made at the project restructuring on November 15, 2011.

Source: The World Bank

Annex 2 Project Outputs

Summary of the Project Outputs

Component	Scope	Implementation	
		Start	End
Component A: Shihutang Complex	The Complex consists of the main elements of (1) Class III navigation waterway of 38 kilometers, (ii) main dam of 523 meters with of 23 sets of dam sluice gates, (iii) a Grade III single ship lock for 1,000 ton vessels, (iv) a powerhouse with the capacity of 120 MW and average annual power generation of 527 million KWH, (v) two sections of 842 meter earth dam and 83.5 meters concrete gravity dam for connecting the river banks; and (vi) dam crest access road of 1.64 kilometers. The output is the same as appraised, except that the dam crest road is 700 meters longer.	06/03/2009	08/30/2013
Component B: Flood Protection Works	The flood protection work include (i) 43 kilometers of dikes, (ii) 45 kilometers of diversion canals, (iii) 8 sets of pumping stations with total capacity of 5,980kW, and (iv) 2 sets of free drainage sluices and 2 sets of regulating sluices. Outputs are the same as appraised, except for six kilometers of diversion canals under the original design being replaced by two pumping stations.	01/15/2009	10/20/2012
Component C: Capacity Building	Study One: Optimization of Reservoir Operation	12/20/2007	03/24/2009
	Study Two: Technology for Waterway Treatment	05/08/2012	08/15/2013
	Training and study tour. Total participants of 576 persons, including 541 persons of domestic trainings and 35 times of oversea trainings and study tours. Outputs are the same as appraised, except that more staff was trained..	04/10/2009	06/15/2013

Source: The Project Management Office

Annex 3 Economic and Financial Analysis

i. Economic Analysis

1. The development objective (PDO) of the Project is to improve utilization of Gan River for more reliable freight transport and for cleaner energy production. The PDO is to be achieved through (i) improving inland waterway transport capacity and service levels for primary and secondary industries in the Nanchang-Ganzhou corridor of Gan River, and (ii) generating clean renewable electricity to help meet rapidly growing demand for energy in the region. There have been no changes in the PDOs and in main economic benefits since appraisal.
2. The main beneficiaries of the Project were the people and businesses engaged in river transportation, farming communities downstream and the local population that took advantage of the increased electricity generated, and employment opportunities offered, by the Project. The project's beneficiary areas are mainly poor inland areas (these areas are the source of raw materials that are much of the cargo carried on the river). Therefore, the Project has particularly benefited poor regions and poor populations through providing local economic development opportunities and improving the living standard of the local population.
3. The principal measured benefits of the project are savings in transport costs as a result of larger vessels using the inland waterway, the economic value of the power, and avoided property and productivity losses due to floods. In 2013 waterway traffic in the Gan River was 285 million tons, double the projected number. However, the on-going construction of the downstream Xiajiang Complex has blocked the river channel for navigation and the number of the ships passing the Shihutang Ship-lock has been very low; only 35,000 tons passed through Shihutang ship-lock in 2012-14. Freight traffic volume passing through Shihutang ship-lock in 2020 is projected to be 4.4 million tons, i.e., 8,800 vessels at an average of 500s ton per vessel.
4. Six turbines, with a total generation capacity of 120 MW, were installed on schedule in April 2013. Electricity generation at the Shihutang Complex was 24.6 GWh in 2012, 284.0 GWh in 2013, and 326.0 GWh in 2014. These are lower than the values estimated at appraisal due to flooding in a tributary above the Shihutang Complex and on-going delay in reservoir filling. Electricity generation is projected to reach 520 GWh by 2020 and 598 GWh by 2034. The projected reduction in CO2 emissions has been correspondingly adjusted downwards.
5. The Complex provides benefits of flood control in the lower reaches of the Gan River. Annual flood control benefits remain the same as estimated at appraisal. The new road on the Shihutang Dam benefits local people who cross Gan River in terms of reduced road transport cost and time saved; this relatively small amount of USD0.5 million per year Was not envisaged at appraisal.
6. Cost-benefit analysis conducted at appraisal estimated an EIRR of 14.9% as reported in the PAD. Using the same valuation methods and the same assumptions of travel cost savings per ton and the economic benefit of electricity generated per Kwh, EIRR at the ICR stage is estimated at 12.9%. The lower EIRR is mainly due to the lower waterway traffic in the Shihutang section and lower amount of electricity generated than projected at appraisal. However, the EIRR of 12.9% is higher than the cut off threshold of 12%.

ii. Financial Analysis

7. Financial re-evaluation was carried out based on incurred investment costs, operations and maintenance (O&M) costs and revenue generated, as well as corresponding projections provided by JANA.

8. **Project Costs.** Project cost at completion was RMB2,234.80 million (USD344.05 million equivalent at the average exchange rate),¹ about 2.7% lower than that estimated at appraisal (RMB2,296.87 million). Project investments commenced in 2009, about one year later than anticipated and was completed in 2014, about two years later than anticipated at appraisal.

9. The Shihutang Complex is being operated by the Shihutang Complex Management Section (SCMS), which is a regional unit of JANA. SCMS has three groups for operating and maintaining the power house, ship-lock, and flood protection facilities. Currently there is 52 staff for operating and maintaining the power house. The operation cost (mainly for salaries and management) was about RMB6.7 million in 2012 and RMB13.3 million in 2013, and is projected to be about RMB20.0 million in 2014. It is projected to increase 3% per year. The cost of routine maintenance (daily maintenance and small rehabilitation) was RMB1.7 million in 2012 and RMB3.3 million in 2013, and is projected to be about RMB5.0 million in 2014. Routine maintenance costs are projected to increase by 3% per year. Periodic maintenance for replacement of the generators and dam sluice gates is scheduled every 5 years at a cost of RMB12.0 million.

10. Currently there are six staff operating and maintaining the ship-lock at an operating cost of about RMB1.2 million in 2012 and RMB2.3 million in 2013. Operating costs in 2014 are expected to be about RMB3.5 million and are expected to increase 3% per year. Staff will be increased to 32 staff for the full operation of the ship-lock. Routine maintenance costs were RMB0.33 million in 2012 and RMB0.67 million in 2013; it is estimated to be RMB1.0 million in 2014. Routine maintenance costs are expected to increase by 3% per year. Periodic maintenance is scheduled in every 5 years at a cost of RMB5.0 million.

11. Flood protection facilities are now operated and maintained by 16 staff. Routine maintenance costs were estimated at RMB2.4 million in 2014. The routine maintenance costs are expected to increase 3% per year. Periodic maintenance is scheduled every 5 years at a cost of RMB3.0 million.

12. **Electricity Generation and Revenue.** At the end of June 2014, total electricity generated was 472 GWh: 25 GWh in 2012, 284 GWh in 2013, and 163 GWh in the first half of 2014. Power generation is forecasted to increase 25% in 2015, 5% in 2016–2020 and reach 520 GWh in 2020 (the designed capacity); it is expected to further increase by 1% a year from 2021 and reach 598 GWh in 2034.² Power generated has been successfully networked with the regional electricity grid.³ The temporary tariff for electricity uploaded to the grid is RMB0.37 per KWh and yielded revenues of RMB8.6 million in 2012, RMB99.7 million in 2013, and RMB114.5 million in 2014. The proposed tariff of RMB0.43 per KWh is planned to be applied in 2016.

¹ During project implementation, the exchange rates of USD to RMB had significant reduction from RMB7.20 at appraisal to RMB6.154 at completion. The project cost in USD was calculated using annual investment by cost items and the exchange rates in corresponding years.

² In general, the designed capacity can be exceeded by 10%–20%.

³ The agreement on uploading the electricity generated by the Project to the regional electricity network was initialized on December 15, 2011 between Jiangxi Power Company and Jiangxi Ganjiang Shihutang Water Resources Development Company.

13. The Shihutang Complex ship-lock was opened to traffic in October 2011. However, due to the on-going construction of the Xiajiang ship-lock downstream, traffic was much lower than expected. The Xiajiang ship-lock project was completed in May 2014 and traffic at Shihutang is expected to resume. According to the Gan River development plan, total cargo would reach 8.8 million ton in 2020, of which about half is expected to pass through the Shihutang ship-lock. It is projected that 2020 traffic of 4.4 million tons would grow annually at about 10% in 2021–2025, 8% in 2026–2030, 5% in 2031 and onwards. Currently, there is no charge for using the ship-lock.

14. In the financial re-evaluation, 5% of the self-used electricity was removed from revenue generation. In the financial re-evaluation the tolling and revenue generation for the ship-lock were not considered.

15. **Financial Internal Rate of Return.** Based on the above assumptions and projections, the financial internal rate of return (FIRR) of the Project was recalculated with the following additional assumptions: (i) project life of 25 years, including 6 years for construction and 22 years for operation (with a three year overlap); (ii) half of the capital cost was treated as residual value of the investment and was added to the last year; (iii) revenues from the ship-lock and sale of carbon credits were excluded; and (iv) value added tax (VAT) of 17% on total sales and corporative income tax rate of 25% on profits were taken into account. The recalculated FIRR was 3.5% before tax and 1.6% after tax, compared to the 0.2% estimated at appraisal.⁴ The higher FIRR is mainly due to lower investment costs and higher electricity tariffs. However, the recalculated FIRR is still lower than the cost of capital (5.1%) estimated at appraisal.

⁴ In the PAD, it didn't specify that the FIRR of 0.2% was for before or after tax.

Annex 4 Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Wenlai Zhang	Transport Specialist,	EASCS	TTL
John Scales	Senior Transport Specialist	EASCS	
Syed I. Ahmed	Lead Counsel	LEGES	
Mei Wang	Senior Counsel	LEGES	
Han-Kang Yen	Financial and Economic Specialist	EASTE	
Jianjun Guo	Procurement Specialist	EAPCO	
Yi Geng	Financial Management Specialist	EAPCO	
Junxue Chu	Senior Finance Officer	LOAFC	
Haiyan Wang	Finance Officer	LOADM	
Xuan Peng	Team Assistant	EACCF	
Xiaofeng Li	Senior Program Assistant	EACCF	
Peishen Wang	Senior Environment Specialist	EASCS	
Juan Quintero	Senior Environment Specialist	EASRE	
Songling Yao	Social Specialist	EASCS	
Chaohua Zhang	Senior Social Specialist	EASSO	
Ximing Zhang	Water Resources Specialist	EASCS	
Alessandro Palmieri	Lead Dam Specialist	OPCQC	
Paul Amos	Transport Adviser		Consultant
Kek Choo Chung	Waterway Specialist		Consultant
Jiang Dai	Hydropower Specialist		Consultant
Jianming Zhao	Geotechnical Specialist		Consultant
Hongkun Yang	Hydro-engineering Specialist		Consultant
Jianping Zhao	Lead Energy Specialist	EASCS	Quality Reviewer
Marc Juhel	Lead Transport Specialist	ETWTR	Peer Reviewer
Jose Barbero	Senior Transport Specialist	LCSTR	Peer Reviewer
Supervision/ICR			
<i>Bank Staff</i>			
Wenlai Zhang	Sr. Transport. Specialist	EASCS	TTL
Songling Yao	Senior Social Development Specialist	EASCS	
Yi Geng	Sr Financial Management Specialist	EASFM	
Xuan Peng	Program Assistant	EACCF	
Jianjun Guo	Senior Procurement Specialist	EASR2	
Ning Yang	Environmental Specialist	EASCS	
Aimin Hao	Social Development Specialist	EASCS	
Yuhui Jiao	Transport Specialist	EASCS	TTL
Limei Sun	Program Assistant	EACCF	
Jian Xie	Senior Transport Specialist		
<i>Non-Bank Staff</i>			
Jiang Dai	Hydropower Specialist		Consultant
Hongkun Yang	Civil Works Specialist		Consultant

Jianming Zhao	Geotechnical Specialist		Consultant
Baoru Song	Project Management Consultant		Consultant
Chuntai Zhang	Economist/Financial Specialist		Consultant

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY07	23.85	52,418
FY08	30.98	80,645
FY09	4.30	23,823
Total:	59.13	156,886
Supervision/ICR		
FY09	8.00	22,506
FY10	14.02	33,002
FY11	2.23	10,485
FY12	10.96	19,820
FY13	7.87	19,481
FY14	11.08	24,874
FY15	3.83	13,749
Total:	57.99	143,917

(c) Bank Missions

No	Mission	Dates (begin-end)	Mission Leader
1	Reconnaissance Mission	September 5-6, 2006	John Scales
2	Identification Mission	January 21-26, 2007	Zhang Wenlai
3	Preparation Mission	May 21-25, 2007	Zhang Wenlai
4	Pre-appraisal Mission	September 24-28, 2007	Zhang Wenlai
5	Appraisal Mission	February 12-15, 2008	Zhang Wenlai
6	Pre-Implementation Mission	December 18-19, 2008	Zhang Wenlai
7	Supervision Mission (Launch Workshop)*	April 20-23, 2009	Zhang Wenlai
8	Supervision Mission	November 9-13, 2009	Zhang Wenlai
9	Supervision Mission	April 21-23, 2010	Zhang Wenlai
10	Supervision Mission	October 25-28, 2010	Zhang Wenlai
11	Supervision Mission	April 26-29, 2011	Zhang Wenlai
12	Supervision Mission	October 10-13, 2011	Zhang Wenlai
13	Supervision Mission	April 23-27, 2012	Zhang Wenlai
14	Supervision Mission	October 22-24, 2012	Zhang Wenlai
15	Supervision Mission	April 22-26, 2013	Jiao Yuhui
16	Supervision Mission	December 23 -26	Jiao Yuhui
17	Supervision Mission	June 16 – 20, 2014	Jiao Yuhui

* The mission was led by Ede Ijjasz-Vasquez (Sector Manager)

Annex 5 Summary of Borrower's ICR and/or Comments on Draft ICR

Introduction

1. Upon completion, the Jiangxi project management office (JPMO) prepared the Borrower's Implementation Completion and Results (ICR) Report for the Jiangxi Shihutang Navigation and Hydropower Complex Project (the Project),⁵ which was submitted to the World Bank on July 21, 2014. The Borrower's ICR report was prepared in Chinese and generally in good quality. The Borrower's ICR report covered many aspects of the project preparation, implementation, and sustainability. Following are the key points in the Borrower's ICR report.

Achievements of the Project Development Objectives

2. **Highly relevant with government's strategy.** The project design and implementation was highly relevant with government's IWT sub-sector development strategy. The Project was a key project for the whole Gan River IWT development, which was listed in the MOT's and Jiangxi Provincial 11th Five Year Plans. The Project was also in line with the government's strategy of developing clean energy. In Jiangxi Province, IWT of Gan River was not well developed and utilized, and the power supply could not meet the fast socioeconomic development. The construction and completion of the Project has well improved the IWT condition in middle section of Gan River and also alleviated the electricity shortage in the project area.

3. **Achievements of project outputs and objectives.** All project components were completed as anticipated at appraisal. The main dam and connecting bank dams were fully completed in March 2013; the powerhouse started full operation in April 2013; all flood protection works were fully completed in September 2012; and the capacity building programs were implemented as planned. The anticipated project development objectives have been mostly achieved.

4. **Socioeconomic benefits.** The Project has brought substantial socioeconomic impacts to the project area. The Project has improved the IWT channel to Grade III, which has significantly reduced the transport cost; The electricity generated by the powerhouse has alleviated the power shortage and supported the industry and agriculture development in the project area; About 55,900 mu arable land has improved its against flood capability from 5-years to 10–30-years floods; The dam crest access road has shortened the travel distance of 12 kilometers between Wanhe Town and Taihe County. The total beneficiaries are estimated at 150,000 people, including 50,000 direct beneficiaries.

5. **Overall assessment.** The project design and implementation was highly relevant with government's IWT sub-sector development strategy. All project components were completed as anticipated at appraisal. The project cost was controlled under the original budget. The Project has brought substantial socioeconomic impacts to the project area. The operation has clear institutional and financial arrangement.

Project Risks and Sustainability

6. **IWT sub-sector development.** In the national 11th Five Year Plan, the waterway has been designated as a key development sub-sector, especially for container, coal, crude oil, and iron ore

⁵ The JPMO. June 2014. *The Borrower's Implementation Completion and Results Report for the World Bank financed Jiangxi Shihutang Navigation and Hydropower Project (P1010988—CHA)*.

transportation. Central and project provincial governments' commitment to IWT development has kept strong. The IWT development along Gan River has been experiencing a booming stage, which has ensured the strong sustainability of the Project.

7. **Initial operation of Shihutang Complex.** The Shihutang Complex is now operated by Shihutang Complex Management Section (SCMS), which is a regional unit of the JANA with full financing by the government fiscal allocations. Currently, the SCMS has about 52 staff in responsible for the management and operation of the powerhouse, ship lock, water discharge sluices, river banks, flood protection facilities, etc. The operation and maintenance capacity of the Shihutang Complex is adequate.

8. **Capacity building.** The SCMS has regular training programs to its staff, including annual domestic study tour and training. In addition, the JANA invites experts to the project site to provide technical trainings on various aspects of the facility operation and maintenance.

Lesson Learned

9. The Project was well implemented and achieved its objectives anticipated at appraisal. The major lessons for ensuring the success of the project implementation included.

10. **Opening mind and learning.** The Project was a key engineering project in the provincial IWT development plan, as well as the biggest one in terms of investment. It was also the first one in the Jiangxi IWT development, which was financed by the World Bank loan. All participants for implementing the Project well adopted related national and provincial technical standards, procedure, and legislation; strengthened construction quality and safety controls; and monitored the implementation progress and timely adjusted the working plan.

11. **Restricting project management.** According to the Project Administration Manual, the project implementation restricted the project management throughout the implementation period, including closely followed the implementation procedure, well designed contract packages, strictly carried out procurements, enhanced quality and quantity control, and actively revised the project design and approved project documents, and timely approved contract variations and disbursements.

12. **Paying enough attention to local socioeconomic development.** The Project has substantial impacts to the local transport development, revenue generation of local governments, flood protection improvement, urbanization and livelihood improvements, etc. The project design and implementation paid adequate attentions to such socioeconomic development in the project area. The project achievements and impacts have proved that the Project is a key project in the history of Jiangxi IWT development.

13. **Enhancing coordination.** The project implementation enhanced the coordination with design institutes, the contractors, and the local governments. Due to lowest-price bidding and serious floods, the project implementation experienced some financial problem. The JPMO timely coordinated with related government agencies and the contractors to optimize the project design and solve the problem in contractor's budget shortages.

14. **Strengthening ecology protection.** The project implementation well complied with related government's and World Bank's environment policies and requirements, including avoiding large earth works, reducing soil erosion, minimizing land acquisition, recovering temporary land used by the project implementation, and protected or rescued about 700 camphor trees.

15. ***Intensifying communication.*** The Project implementation intensified communications with the World Bank and related government agencies, like provincial financial department, audit authority, quality inspection. The JPMO regularly reported the project progress to the related government agencies, as well as invited them to visit the project site annually. Consequently, the project implementation received various constructive guidance and timely supports from these government agencies.

Recommendations

16. ***Lowest price bidding.*** While applying the Bank's procurement policy and procedure of lowest price bidding, bidding prices for most of the contract packages were lower than estimated. Some of them were lower than reasonable price. This might cause problems in the project implementation, like delay in commencement, unreasonable contract variation, low construction quality, etc. Likely, this problem has happened to other similar projects. It is suggested that the World Bank might design and conduct related study to look for effective and efficient approach, which may well compliance with World Bank policy and also avoid the problem above.

17. ***Depreciation of foreign currency.*** In the project implementation period, the US\$ against RMB had significant depreciation, which led to shortage of the project fund. For solving this problem, the government and JANA made special efforts to increase the fiscal allocation and borrow commercial loan from domestic bank. It is suggested that the World Bank might establish special fund/loan for supplementing the fund shortage caused by foreign currency depreciation.















Annex 6 Comments of Cofinanciers and Other Partners/Stakeholders

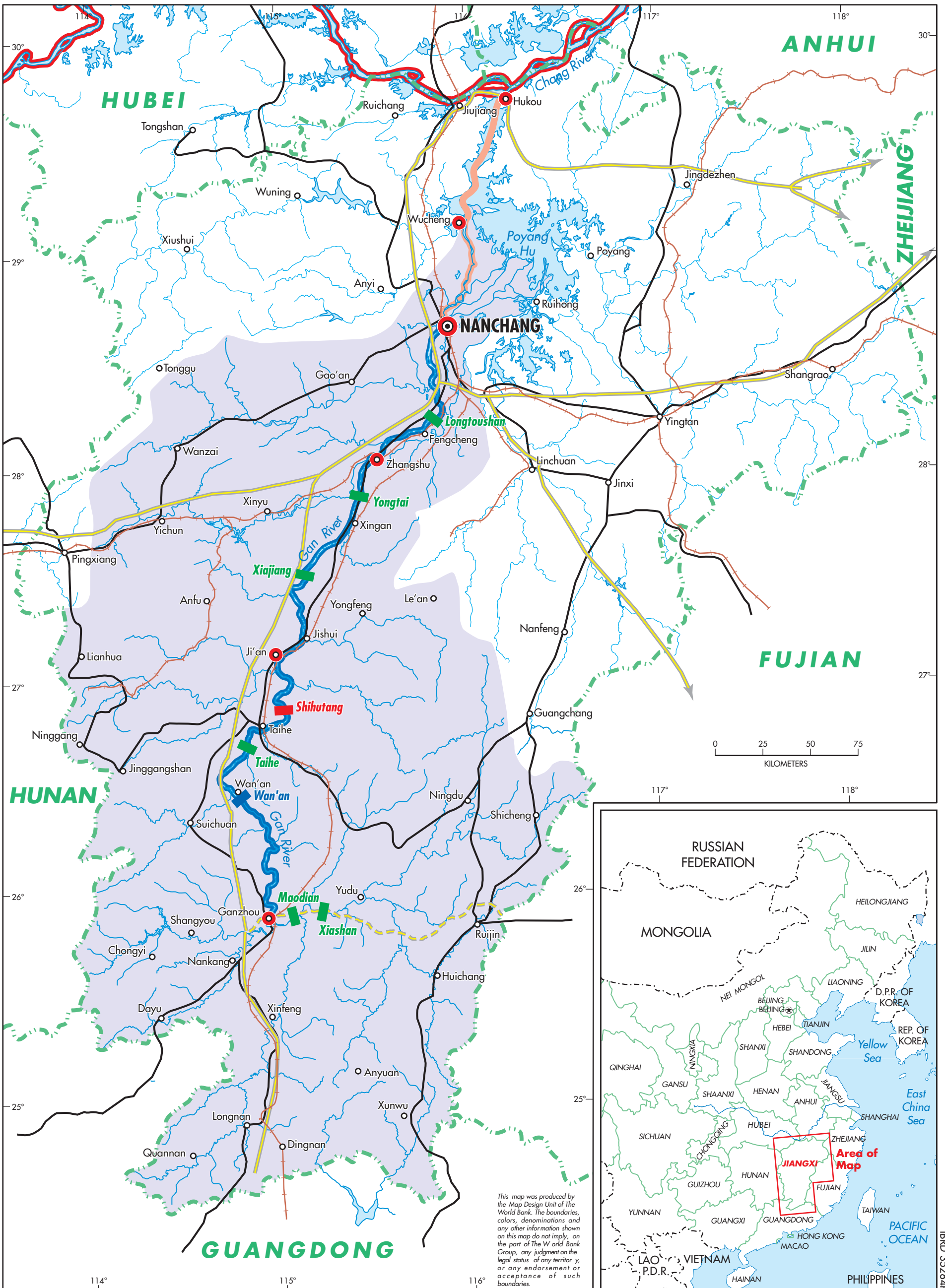
Not applicable

Annex 7 List of Supporting Documents

1. The World Bank, August 14, 2008, *Project Appraisal Document on a Proposed Loan in the Amount of US\$100 million to the People's Republic of China for a Jiangxi Shihutang Navigation and Hydropower Complex Project*.
2. Loan Agreement. November 28, 2008, *Jiangxi Shihutang Navigation and Hydropower Complex Project between People's Republic of China and International Bank for Reconstruction and Development*.
3. Project Agreement. November 28, 2008, *Jiangxi Shihutang Navigation and Hydropower Complex Project between People's Republic of China and International Bank for Reconstruction and Development*.
4. The World Bank. May 2006. *Country Partnership Strategy for the People's Republic of China for the Period of FY2006-FY2010*. Approved by the Board on May 23, 2006.
5. The World Bank. October 2012. *Country Partnership Strategy for the People's Republic of China for the Period of FY2013-FY2016*. Report No. 67566-CN.
6. The World Bank, November 15, 2011, *Office Memorandum – Restructuring Paper for “Jiangxi Shihutang Navigation and Hydropower Complex Project (Loan 7580-CN)”*.
7. The World Bank, November 15, 2011, Fax to the MOF, *China: Jiangxi Shihutang Navigation and Hydropower Complex Project (Loan 7580-CN) – Amendment to the Loan Agreement*.
8. January 15, 2010. Spanish Carbon Fund. *Clean Development Mechanism Certified Emission Reductions Purchase Agreement (Jiangxi Shihutang Hydropower Project)*, between Jiangxi Gan River shihutang Water Resource Multipurpose Development Company Limited and International Bank for Reconstruction and Development (as trustee of the Spanish Carbon Fund).
9. The World Bank, ISR #1– #8. *Jiangxi Shihutang Navigation and Hydropower Complex Project (P101988)*.
10. The World Bank, all mission AMs. *Jiangxi Shihutang Navigation and Hydropower Complex Project (P101988)*.
11. The World Bank, July 18, 2012, Fax to the JANA. *China: Jiangxi Shihutang Navigation and Hydropower Project (Ln No. 7580- CHA) – Audit Report for the year ended December 31, 2011*. The project task team.
12. The JPMO. June 2014. *The Borrower's Implementation Completion and Results Report for the World Bank financed Jiangxi Shihutang Navigation and Hydropower Project (P1010988—CHA)*.
13. The JPMO. all semi-annual project progress reports. *The World Bank financed Jiangxi Shihutang Navigation and Hydropower Project (P1010988—CHA)*.
14. The JPMO. Completion Report on Land Acquisition and Resettlement for the Gan River Shihutang Navigation and Hydropower Complex Project.
15. The JANA. February 2008. *Resettlement Plan of Shihutang Hydropower Project on Ganjiang River in Jiangxi Province*. China Pearl River Water Resources Planning, Design and Survey Co. Ltd. Jiangxi Provincial Water Conservancy Planning and Designing Institute
16. The JANA, October 2007, ENVIRONMENT IMPACT ASSESSMENT (Executive Summary) of *Shihutang Hydropower Project on the Gan River*. CCCC SECOND HARBOR CONSULTANTS CO., LTD. JIANGXI PROVINCIAL WATER RESOURCE PLANNING AND DESIGN INSTITUTE

CHINA
JIANGXI SHIHUTANG NAVIGATION AND HYDROPOWER COMPLEX PROJECT
 WATER SYSTEM ON THE GAN RIVER

- | | | |
|---|--|--|
|  SHIHUTANG DAM |  GRADE I NAVIGATIONAL CHANNEL |  SELECTED CITIES |
|  EXISTING DAMS |  GRADE II NAVIGATIONAL CHANNEL |  PROVINCE CAPITAL |
|  FUTURE DAMS |  GRADE III NAVIGATIONAL CHANNEL |  EXISTING EXPRESSWAYS |
|  GAN RIVER BASIN | |  EXPRESSWAYS UNDER CONSTRUCTION |
| | |  NATIONAL ROADS |
| | |  RAILROADS |
| | |  PROVINCE BOUNDARIES |



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.