



Completion Report

Project Number: 37641-013
Loan Number: 2244
August 2016

People's Republic of China: Hunan Flood Management Sector Project

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Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – yuan (CNY)

		At Appraisal	At Project Completion
		19 May 2006	11 August 2016
CNY1.00	=	\$0.125	\$0.151
\$1.00	=	CNY8.010	CNY6.637

ABBREVIATIONS

ADB	–	Asian Development Bank
CEMP	–	consolidated environmental management plan
DMF	–	design and monitoring framework
EAMF	–	environmental assessment and management framework
EIRR	–	economic internal rate of return
EMDP	–	ethnic minority development plan
EMP	–	environmental management plan
FCDRH	–	Flood Control and Drought Relief Headquarters
ha	–	hectare
HPG	–	Hunan Provincial Government
IEE	–	initial environmental examination
LEPB	–	local environmental protection bureau
LPMO	–	local project management office
M&E	–	monitoring and evaluation
NCB	–	national competitive bidding
O&M	–	operation and maintenance
PFD	–	Hunan Provincial Finance Department
PPMO	–	provincial project management office
PPTA	–	project preparatory technical assistance
PRC	–	People's Republic of China
PWRD	–	Provincial Water Resources Department
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the government and its agencies ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2009 ends on 31 December 2009.
- (ii) In this report, "\$" refers to US dollars.

Vice-President	S. Groff, Operations 2
Director General	A. Konishi, East Asia Department (EARD)
Director	Q. Zhang, Environment, Natural Resources, and Agriculture Division, EARD
Team leader	Y. Kobayashi, Senior Water Resources Specialist, EARD
Team members	M. Anosan, Project Analyst, EARD
	E. Arcillas, Senior Operations Assistant, EARD
	M. Bezuijen, Senior Environment Specialist, EARD
	D. Boland, Environmental Economist, EARD
	S. Ferguson, Principal Social Development Specialist, EARD
	S. Tirmizi, Young Professional, EARD

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BASIC DATA

A. Loan Identification

1.	Country	People's Republic of China
2.	Loan Number	2244
3.	Project Title	Hunan Flood Management Sector Project
4.	Borrower	People's Republic of China
5.	Executing Agency	Hunan Provincial Government
6.	Amount of Loan	\$200 million
7.	Project Completion Report Number	1586

B. Loan Data

1.	Appraisal		
	– Date Started	21 August 2005	
	– Date Completed	3 September 2005	
2.	Loan Negotiations		
	– Date Started	15 May 2006	
	– Date Completed	17 May 2006	
3.	Date of Board Approval	29 June 2006	
4.	Date of Loan Agreement	4 October 2006	
5.	Date of Loan Effectiveness		
	– In Loan Agreement	2 January 2007	
	– Actual	9 January 2007	
	– Number of Extensions		
6.	Closing Date		
	– In Loan Agreement	31 March 2013	
	– Actual	31 December 2014	
	– Number of Extensions	1	
7.	Terms of Loan		
	– Interest Rate	The sum of London interbank offered rate and 0.60%	
	– Maturity (number of years)	26 years	
	– Grace Period (number of years)	6 years	
8.	Terms of Relending (if any)		
	– Interest Rate	The sum of London interbank offered rate and 0.60%	
	– Maturity (number of years)	26 years	
	– Grace Period (number of years)	6 years	
9.	Disbursements		
	a. Dates		
	Initial Disbursement	Final Disbursement	Time Interval
	27 November 2007	17 December 2014	85 months
	Effective Date	Original Closing Date	Time Interval
	9 January 2007	31 March 2013	75 months

b. Amount (\$ million)						
Category or Subloan	Original Allocation	Last Revised Allocation	Amount Canceled	Net Amount Available	Amount Disbursed	Undisbursed Balance
Civil works for structural flood protection	165.40	192.70	8.31	184.39	184.39	0.00
Equipment for structural flood protection	20.00	2.93	0.15	2.79	2.79	0.00
Equipment for nonstructural flood management	10.50	1.59	0.16	1.43	1.43	0.00
Project management equipment	0.80	0.63	0.06	0.58	0.58	0.00
Project management vehicle	2.20	1.88	0.01	1.87	1.87	0.00
Overseas training	0.90	0.26	0.14	0.12	0.12	0.00
Domestic Training	0.20	0.00	0.00	0.00	0.00	0.00
Total	200.00	200.00	8.83^a	191.18	191.18	0.00

Note: Amounts may not add up exactly due to rounding.

^a \$8,827,703.21 was cancelled at loan closing.

10.	Local Costs (Financed)	
-	Amount (\$)	0
-	Percent of Local Costs	0
-	Percent of Total Cost	0

C. Project Data

1. Project Cost (\$ million)		
Cost	Appraisal Estimate	Actual
Foreign Exchange Cost	242.3	203.5
Local Currency Cost	255.1	364.1
Total	497.4	567.6

2. Financing Plan (\$ million)

Cost	Appraisal Estimate	Actual
Implementation Costs		
Borrower Financed	261.2	364.1
ADB Financed	200.0	191.2
Other External Financing		
Total	461.2	555.3
IDC Costs		
Borrower Financed	36.2	12.3
ADB Financed	0.0	0.0
Other External Financing	0.0	0.0
Total	36.2	12.3

ADB = Asian Development Bank, IDC = interest during construction.

3. Cost Breakdown by Project Component (\$ million)

Component	Appraisal Estimate	Actual
A. Base Costs		
Nonstructural flood management systems	11.4	14.4
Structural flood protection, resettlement, and environmental management	387.5	499.2
Project management and capacity building	31.9	25.0
Taxes and duties	13.6	16.7
B. Contingencies		
Physical contingencies	12.0	-
Price contingencies	4.8	-
C. Financing Charges During Implementation		
Total	36.2	12.3
Total	497.4	567.6

4. Project Schedule

Item	Appraisal Estimate	Actual
Date of Contract with Consultants ^a	Not applicable	Not applicable
Completion of Engineering Designs	July 2006–August 2011	August 2006–January 2012
Civil Works Contract		
Date of Award	October 2006–November 2011	November 2006–January 2014
Completion of Work	September 2009–December 2012	November 2012–December 2014
Equipment and Supplies		
Dates		
First Procurement	December 2007	April 2009
Last Procurement	December 2008	December 2014
Completion of Equipment Installation	April 2009–August 2010	May 2010–December 2014
Start of Operations		
Completion of Tests and Commissioning	September 2010–December 2013 ^b	November 2013–December 2015 ^b
Beginning of Start-Up	October 2009–January 2013	December 2012–January 2015

^a No consulting services contract was awarded under the project.

^b The final inspection is conducted one year after the completion of the contract.

5. Project Performance Report Ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
From 30 April 2007 to 31 December 2007	Satisfactory	Satisfactory
From 1 January 2008 to 31 December 2008	Satisfactory	Satisfactory
From 1 January 2009 to 31 December 2009	Satisfactory	Satisfactory
From 1 January 2010 to 31 December 2010	Satisfactory	Satisfactory
From 1 January 2011 to 31 December 2011	On track	On track
From 1 January 2012 to 31 December 2012	On track	On track
From 1 January 2013 to 31 December 2013	On track	On track
From 1 January 2014 to 31 December 2014	On track	On track

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members
Fact-finding	4–22 June 2005	6	65	a, c, d, f, g
Appraisal	21 August–3 September 2005	6	50	a, d, g, i, j
Inception	12–19 December 2006	5	30	a, b, e, j
Review 1 ^a	25–31 May 2007	3	15	b, g, k
	19–26 June 2007			
Special project administration 1	16–22 January 2008	1	5	b
Review 2	17–24 July 2008	2	12	b, h
Special project administration 2	24 March–1 April 2009	2	14	b, h
Midterm	14–25 September 2009	3	30	b, g, h
Review 3	1–3 June 2010	1	3	b
Review 4	18–21 February 2011	1	4	b
Special project administration 3	28 November–7 December 2011	3	24	b, f, g
Review 5	19–25 June 2012	5	26	b, f, h, n, o
Special project administration 4	3–8 December 2012	1	5	b
Review 6	4–9 December 2013	2	8	b, o
Special project administration 5	18–21 July 2014	2	8	b, k
Review 7	9–12 October 2015	1	4	b
Project completion review	24–27 May 2016	7	35	a, b, g, l, n, o, p

a = economist, b = water resources specialist, c = finance specialist, d = project specialist, e = procurement specialist, f = environment specialist, g = resettlement specialist, h = social development specialist, i = counsel, j = project officer, k = analyst, l = young professional, m = staff consultant for project management, n = staff consultant for project evaluation, o = staff consultant for environment, p = staff consultant for resettlement.

^a The mission was fielded intermittently.

I. PROJECT DESCRIPTION

1. Many cities and industrial centers in the People's Republic of China (PRC) are on or near major rivers, which leaves a high proportion of the country's economic activity at risk from periodic floods. Major flooding and poor drainage that contributes to it constitute the most common and severe form of natural hazard in the PRC. To deal with it, the Ministry of Water Resources has changed its strategy from a flood control approach to an integrated flood management approach based on river basins. This strategic shift is economically and environmentally sustainable and aims to be socially inclusive.

2. Floods are a recurrent hazard in Hunan Province. Reflecting the strategic shift of the Ministry of Water Resources, the Hunan provincial government (HPG) combined structural flood control with nonstructural flood management under its 11th five-year plan for 2006–2010. The nonstructural flood management included the improvement of flood forecasting, flood warnings, and emergency response. The Hunan Flood Management Sector Project approved by the Asian Development Bank (ADB) in 2006 supported the implementation of part of Hunan's integrated flood management program under the five-year plan.¹ To help sustain economic growth and development in Hunan, the project's activities focused on the basins on the upper reaches of the Lishui, Xiangjiang, Yuanjiang, and Zishui rivers. These rivers drain 84% of Hunan's area, and the basins are home to 84% of the Hunan's people.

3. The project's expected impact was to enhance sustainable and inclusive socioeconomic growth in flood-prone areas of Hunan Province. The intended outcome was to improve flood protection for strategic and priority flood-prone areas in the upper reaches of the four main river basins in Hunan Province. The project comprised four components: (i) strengthening nonstructural flood management systems; (ii) preparing and completing structural flood protection works, along with the related resettlement and environmental management activities; (iii) strengthening project management and building capacities; and (iv) supporting flood management and planning.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

4. The project helped the PRC government implement a strategic shift from a flood control approach to an integrated flood management approach in Hunan. It supported the HPG in strengthening the abilities of city and county governments to carry out integrated flood management. The PRC government's long-term development goal at the time of appraisal was to maintain steady economic growth and improve living standards. ADB operations in the PRC supported this strategy by focusing on (i) helping achieve equitable and inclusive growth, (ii) making markets work better, (iii) improving the environment, and (iv) supporting regional cooperation in Asia and Pacific region.² The project sought to enhance sustainable economic growth by reducing the concerns of potential investors over flooding. This promoted industrial development and employment in urban areas. It helped indirectly develop rural areas by protecting the urban market centers that rural markets depended on.

5. In line with ADB's policy on water adopted in 2001, the project pursued an integrated

¹ ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to the People's Republic of China for Hunan Flood Management Sector Project*. Manila.

² ADB. 2005. *Country Strategy and Program Update (2006–2008): People's Republic of China*. Manila.

water resource management.³ ADB's policy regards water as a socially vital economic good that needs careful management to sustain equitable economic growth and reduce poverty. It calls on ADB's operations to help conserve and protect water resources through a participatory approach that aligns with the principles of integrated water resource management.

6. The project design was appropriate to the intended project outcome, and so was the use of project preparatory technical assistance (PPTA) to help prepare it.⁴ The PPTA helped the HPG (i) review, assess, and identify cost-effective flood protection measures; and (ii) formulate an improved and integrated flood management investment project with environmental impact assessment and resettlement plans that were consistent with ADB's policies and guidelines. It provided all the inputs needed to prepare the project for ADB financing. Stakeholders were consulted during the project's preparation and implementation to determine its scope and implementation arrangements.

7. The project's expected impact at appraisal remained relevant at completion. The project's design and monitoring framework (DMF) at appraisal is in Appendix 1, along with its achievements at completion against the DMF's targets and indicators.

B. Project Outputs

8. **Component 1: Nonstructural flood management systems.** The output to establish operational flood warning and management systems for 35 cities and counties linked to the flood warning platform of the Hunan Provincial Water Resources Department (PWRD) was successfully delivered. Originally, 12 hydrological and water level monitoring stations and 64 rainfall stations were planned to be constructed under the project. By project completion, 184 water level monitoring, 969 rainfall, and 495 hydrological stations had been constructed. Before these systems were put into place, a flood warning could be issued only several hours to 1 day before an expected flood event. The project achieved its DMF target of increasing the warning period. The new systems enabled warnings to be announced 1–3 days before flood events. The project also achieved its objective of improving the accuracy of flood forecasting and warning. It was 70%–85% before the operations and improved to 85%–90% afterwards.

9. During 2011–2015, the system established in Cili County sent short warning messages 268 times to 74,320 people, issued 980 flood warnings, and helped 48,500 people evacuate. As a result, no injuries or loss of life occurred during serious landslides on 13 May 2012 and extreme rainstorms and flash floods on 6 June 2012 in the county.

10. **Component 2: Structural flood protection, resettlement, and environmental management.** This output involved completing flood protection structures in priority locations as part of the five-year plan (para. 2) and doing this in compliance with the PRC's regulations and ADB's safeguard policies. Based on the assessments of past floods, the project supported the construction or rehabilitation of flood protection structures through 35 subprojects, including 399.2 kilometers of embankments and flood walls, sluice gates, pumping stations, and diversion channels. The review found the flood protection structures to be operating well. The output target to increase flood protection levels from a pre-project baseline 1-in-5-year-return-level to a 1-in-20-year-return-level was achieved in 26 county-level cities and counties. In nine prefecture-level cities, the baseline flood protection level was improved to a 1-in-50–100-year-return-level. In Fenghuang County in July 2014, a 1-in-100-year-return-level flood damaged embankments

³ ADB. 2001. *Water for All: The Water Policy of the Asian Development Bank*. Manila.

⁴ ADB. 2004. *Technical Assistance to the People's Republic of China for Preparing the Hunan Flood Management Project*. Manila.

raised by the project to the 1-in-20-year-return-level. The embankments were repaired by the county government with funds provided by the PWRD. Details on the preparation and implementation of each subproject are in Appendix 2.

11. **Component 3: Project management and capacity building.** A sector approach taken by the project required the approval of 8 core subprojects during project preparation and of 27 noncore subprojects during project implementation. The provincial project management office (PPMO) submitted to ADB all the required reports and plans for the 27 noncore subprojects. These included (i) 27 feasibility study reports; (ii) 27 initial environmental examination (IEE) reports, including environmental management plans (EMPs); (iii) 27 resettlement plans; and (iv) ethnic minority development plans (EMDPs). All were approved by ADB.

12. The project's associated technical assistance (TA) provided the PPMO with 30 person-months of consultancy services (9 international, and 21 national) to support the project's management, including financial management, environmental management, and the management of land acquisition and resettlement (para. 24). However, these inputs fell short of what was needed to help the PPMO manage 35 subprojects scattered all over Hunan and being undertaken independently from one another by 35 separate city and county governments. The consultancy inputs were fully utilized by September 2009, and the PPMO had to manage the project without consultancy services from then on. In addition to the consultants, the PPMO and local project management offices (LPMOs) engaged agencies and experts using their own funds to carry out engineering design, procurement, construction supervision, environmental monitoring, monitoring and evaluation (M&E) of land acquisition and resettlement and ethnic minority development, and preparation of a project completion report (para. 27).

13. The project completed five training courses on overall project management, environmental management, and land acquisition and resettlement. In addition, one training course was provided on flood warning and flood disaster, and three tours were conducted to study flood management—two domestically to Chongqing, Jilin, and Heilongjiang provinces and Tibet Autonomous Region; and one to the United States. The PPMO's procurement of civil works and equipment, including vehicles and equipment for project management, were fully in line with ADB and domestic requirements. The PPMO submitted 24 quarterly progress reports and a project completion report to ADB.

14. **Component 4: Support for flood management and planning.** The associated TA provided capacity building in annual planning and management systems in support of project management, and helped in assessing the flood warning and flood insurance aspects of flood management (para. 24). The findings generated by the TA were used in the preparation of the Hunan's 12th five-year plan for 2011–2015.

C. Project Costs

15. At appraisal, the project cost was estimated to be equivalent to \$497.4 million—comprising \$242.3 million or 49% in foreign exchange and \$255.1 million or 51% in local currency. Of this, \$200.0 million was to be covered by ADB's loan (40%) and \$297.4 by government funds (60%). At loan closing, project costs amounted to \$567.6 million. This broke down into \$203.5 million in foreign exchange (36%) and the equivalent of \$364.1 million in local currency (64%), and \$191.2 million covered by the ADB loan (34%) and \$376.4 million financed by government funds (66%). The full \$200 million ADB loan approved was not used because some contracts were cancelled near the end of the project (para. 25). The actual project cost was higher than the estimate at appraisal mainly due to appreciation of the yuan against US

dollar during implementation. The loan proceeds were reallocated to meet the actual disbursements in March 2014.⁵ Details on project investment and financing are in Appendix 3.

D. Disbursements

16. Of the \$200 million approved, \$191.2 million of the loan proceeds were disbursed from November 2007 to December 2014 (para. 15). Of this amount, \$184.4 million was for civil works, \$6.7 million for equipment and vehicles, and \$0.1 million for overseas training and capacity building. The undisbursed loan balance of \$8.8 million was cancelled, and the loan account was closed on 25 February 2016. The last withdrawal application for liquidation of the imprest account was submitted within the 4-month winding up period after the extended loan closing date of 31 December 2014. However, the liquidation and refund of unutilized loan funds took about 14 months from the extended loan closing date since liquidation of retention monies for some civil works contracts was slow due to late submission of supporting documents to ADB.

17. The loan proceeds were all withdrawn using the imprest fund procedure. No problems were reported by the HPG with the procedure. The imprest account ceiling was initially set at \$5 million, based on a 6-month estimate of expenditures submitted by the HPG to ADB after loan effectiveness. The ceiling was raised to \$8 million in November 2007, to \$12 million in February 2011, and to \$18 million in September 2013 with ADB's approval in response to accelerated implementation and increasing expenditures.

18. Disbursements suffered no institutional or capacity-related issues but were slowed by implementation delays (para. 19).

E. Project Schedule

19. The project was approved on 29 June 2006. The loan and project agreements were signed on 4 October 2006, and the loan became effective on 9 January 2007. The original loan closing date of 31 March 2013 was extended to 31 December 2014. The slower-than-planned implementation was due to (i) delays in some land acquisition and resettlement (Appendix 11); (ii) the need to increase counterpart funds to meet deficits caused by a drop in the yuan value of ADB loan due to yuan appreciation against US dollar; (iii) the need to change the designs of some flood protection structures to accord with urban development plans; (iv) the need to synchronize construction of some flood protection structures with urban development activities; (v) the need for contract variations resulting from the changes in the designs and increased material and labor costs; and (vi) slow performance of some contractors that had won contracts by submitting low bids (para. 26). The planned and actual implementation periods of subprojects are in Appendix 4, and a summary of the project's physical progress is in Appendix 5.

F. Implementation Arrangements

20. The HPG was the executing agency, and the 35 participating cities and counties were the implementing agencies. A project leading group headed by the vice governor of Hunan was established in the HPG to oversee project implementation. The PPMO established in the PWRD included representatives from Hunan Provincial Development and Reform Commission, the Hunan Provincial Finance Department (PFD), and PWRD. Each implementing agency set up a local project leading group and a LPMO for preparing and carrying out its subproject. The PPMO was responsible for overall project management. It coordinated and directed subproject

⁵ In Chinese yuan terms, the project cost at completion was a little lower than the estimate at appraisal. Overall, the reduction of the project cost in Chinese yuan improved the economic internal rate of return.

preparation and implementation by helping the LPMOs plan and manage their subprojects, coordinate the monitoring of land acquisition and resettlement and environment management, and establish project monitoring systems. The PPMO regularly reported on project progress and issues to the project leading group. The project leading group met whenever important issues needed discussion and resolution, which was about once a year on average.

21. The PFD was responsible for managing, monitoring, maintaining, and reconciling the imprest account that it established for the project. Withdrawal applications were prepared and submitted to the PFD through the city or county finance bureaus. The PFD consolidated the withdrawal applications and submitted them to ADB for disbursements. On behalf of the national government (the borrower), the Ministry of Finance relented the ADB loan proceeds to the PFD, which received them on behalf of the HPG. The PFD lent the loan proceeds to the municipal, city, and county finance bureaus of the participating local governments implementing the subprojects. Accounting and auditing for the overall project and each subproject were properly carried out. The institutions involved in the project fulfilled the required functions and responsibilities for financial management.

22. The project was carried out in a generally satisfactory manner using the implementation arrangements that were made at appraisal and remained unchanged.

G. Conditions and Covenants

23. The governments complied fully with most loan and project covenants (Appendix 6). The exceptions involved partial compliance with covenants related to the project leading group, counterpart funds for external resettlement M&E, and environmental monitoring and reporting. The project leading group met once a year on average. The review found the covenant requiring a meeting twice a year to have been unrealistic at points when no specific issues existed for the group to discuss or resolve. The PPMO had meetings quarterly and regularly reported project progress to the group. A requirement that external resettlement M&E reports be submitted to ADB semiannually was not met due to the LPMOs' reluctance to pay the agencies which conducted the M&E (para. 48). Performance of contractors for environmental protection was not reported in project progress reports, although it was required by the project agreement (paras. 40–41). The reporting of environmental monitoring by the PPMO did not fully meet requirements described in environmental assessment and management framework (EAMF) or the consolidated environmental management plan (CEMP), although the project agreement required monitoring to be conducted as described in the EAMF and CEMP (paras. 40 and 41).

H. Related Technical Assistance

24. The associated TA provided 54.6 person-months of consultant inputs, up from the planned 49.0. The TA helped the HPG, particularly the PWRD, plan and implement sustainable flood management. A TA completion report is in Appendix 7.⁶ The TA successfully achieved the expected outcome and delivered the expected outputs: (i) a review and analysis of Hunan's existing flood warning system, (ii) an assessment of the feasibility of providing flood insurance in Hunan, and (iii) further development and capacity building for the project.

I. Consultant Recruitment and Procurement

25. At loan closing, the ADB-financed contracts comprised (i) 4 goods contracts awarded

⁶ ADB. 2014. *Technical Assistance Completion Report: Strengthening Flood Management Sustainability in Hunan Province*. Manila.

through national competitive bidding (NCB) for the flood warning and management systems; (ii) 69 civil works contracts awarded through NCB for the structural flood protection, along with 1 civil works contract undertaken through direct contracting and 5 goods contracts awarded through NCB for this component; and (iii) 9 goods contracts awarded through NCB and 1 goods contract awarded through shopping for the project's management.⁷ All were procured in accordance with ADB's Procurement Guidelines (2006, as amended from time to time). Appendix 8 provides details on the procurement packages. Of the 70 civil works contracts, (i) 5 were canceled,⁸ (ii) 14 increased in price,⁹ (iii) 1 decreased in price,¹⁰ and (iv) 2 were not completed by the loan closing date and were not fully paid.¹¹ The cumulative contract awards amounted to \$191.2 million.

26. Some of the contractors that won civil works awards by submitting low bids performed slowly at the start of project implementation. In July 2007, ADB revised a model NCB document for works it had approved in September 2006 to increase the performance security requirement to cover the risk of default by contractors whose bids were low. The first model NCB document was used for 15 civil works contracts. The revised model NCB document, used for the succeeding 54 civil works contracts, worked well. Due to the stiffer performance security requirement, 24 of the bidders that came in with the lowest bids for these 54 contracts chose not to complete the agreements. The award rate, often used to indicate whether a bid is too high or unrealistically low, increased from a low average of 80% for the first 15 civil works contracts to a more reasonable 93% for the 54 contracts using the revised model NCB documents.¹²

27. ADB financed only the consulting services provided under the associated TA (para. 24).¹³ The PPMO and the LPMOs engaged the following agencies and experts using their own funds: (i) 7 design institutes for engineering designs; (ii) 1 procurement agency; (iii) bid evaluation committee members randomly selected from national or provincial databases; (iv) 16 monitoring and advisory agencies for 70 civil works contracts under the 35 subprojects for construction supervision including environmental compliance monitoring and water and soil conservation monitoring; (v) 2 local environmental protection bureaus (LEPBs) for ambient monitoring for Loudi City and Shuangfeng County subprojects; (vi) 2 independent agencies to carry out external M&E of land acquisition and resettlement; (vii) 1 independent agency to carry out external M&E of ethnic minority development; and (viii) professors and experts of Changsha

⁷ International competitive bidding anticipated at appraisal was not conducted due to cost reestimation and repackaging based on the detailed designs, as well as changes in the financing arrangements—some packages were financed fully from counterpart funds.

⁸ These were Leiyang City lot 1, Loudi City lot 1, Qiyang County lots 2 and 3, and Shaoyang City lot 1. The contracts were canceled mainly due to delays in land acquisition and resettlement by the local governments and needs for adjusting the designs to meet relevant urban development plans. These civil works were completed with local government funding.

⁹ These were Baojing County lot 2; Chenxi County lot 1; Hengyang City lots 1 to 5; Jishou City lots 1–3; Longhui County lots 1 and 2; Xiangtan City lot 2; and Yongzhou City lot 1. The prices were increased mainly due to design changes to meet urban landscaping and environmental requirements, and material and labor costs higher than anticipated.

¹⁰ The contract price of Shaodong County lot 1 dropped because part of the planned civil works needed to be conducted under a future urban development plan.

¹¹ Chenzhou City lot 1 and Yongzhou City lot 2 were not completed. The Chenzhou City cancellation was due to slow contractor performance, and the remaining civil works were completed by another contractor using local government funds. The Yongzhou City cancellation was the result of the LPMO's slow performance in contract management. The civil works were undertaken using local government funds after the loan closing date.

¹² The award rate of a contract is the percentage ratio of the bid price submitted by a contractor (excluding provisional sum) to the engineering cost estimate for the contract (excluding provisional sum).

¹³ Consultants for international and domestic training and study tours anticipated at appraisal were not recruited, since those training and study tours were planned and organized by consultants engaged under the associated TA (para. 24) or by the PPMO (Appendix 8).

University of Science and Technology to prepare a project completion report.

J. Performance of Consultants, Contractors, and Suppliers

28. The performance of all suppliers of equipment and vehicles was satisfactory. The suppliers delivered the equipment and vehicles based on contract specifications and provided such related services as installation. The civil works contractors performed satisfactorily except for (i) the contractor for Chenzhou City lot 1 (footnote 11), and (ii) some of the contractors that won civil works awards by submitting low bids (para. 26). The performance of the agencies and experts engaged by the PPMO or LPMOs using their own funds was also satisfactory (para. 27).

K. Performance of the Borrower and the Executing Agency

29. The borrower, represented by the Ministry of Finance, fulfilled its responsibilities, including the submission of official requests to ADB for ADB loan reallocation and the extension of the loan closing date. The PPMO established in the HPG, which was the executing agency, had difficulty managing 35 subprojects scattered over Hunan and being carried out by different implementing agencies. This became particularly true after the consulting services for project management support ended early, and the PPMO was forced to carry out its duties without this support (para. 12). Nevertheless, the PPMO did develop its project management capacity through training (para. 13) and helped successfully carry out necessary land acquisition, resettlement, and civil works by coordinating, directing, and providing needed support to the 35 LPMOs. The project leading group established in the HPG also resolved various implementation issues, such as a deficit in counterpart funds. The performance of the borrower and the executing agency is rated *satisfactory*.

L. Performance of the Asian Development Bank

30. ADB's performance is rated *satisfactory*. It carried out 15 missions that addressed issues during implementation: an inception mission, seven review missions, five special project administration missions, a midterm review mission, and a project completion review mission. In its completion report, the PPMO stated that ADB coordinated closely with it, was flexible, and worked hard in helping solve many implementation problems in a timely, effective, and flexible manner. The PPMO's completion report gave ADB's performance a rating of satisfactory.

III. EVALUATION OF PERFORMANCE

A. Relevance

31. Overall, the project is rated *relevant*. The project outcome was fully aligned with the PRC government's strategic shift from a flood control to an integrated flood management, as well as with the PRC government's long-term development goal at the time of appraisal. The outcome was aligned with ADB's country strategy and program update for the PRC for 2006–2008 and ADB's water policy (paras. 4 and 5). However, the review found deficiencies in the implementation arrangements for project management (para. 12) and external resettlement M&E (para.48).

B. Effectiveness in Achieving Outcome

32. Overall, the project is rated *effective* in achieving its intended outcome. The project reduced annual flood damage and disaster relief costs in the project area, as well as annual average direct economic losses caused by floods and waterlogging. The output targets were

substantially achieved. However, the external resettlement M&E reporting was less frequent than required (para. 48), and environmental monitoring and reporting were inadequate (paras. 39–41).

C. Efficiency in Achieving Outcome and Outputs

33. The project is rated *efficient* due to its high efficiency as an investment but comparatively weak implementation process. The project's overall economic internal rate of return (EIRR) was estimated at completion to be 16.4%, demonstrating economic viability. The 35 subprojects were economically viable as well, with completion EIRR estimates in the 12.3%–26.1% range. The completion EIRRs of 26 subprojects exceeded the appraisal estimates, and nine were lower. The gaps between the appraisal and completion EIRRs was due principally to (i) changes in capital costs (due to such factors as the actual offers in competitive contract bidding), as well as changes in material and labor costs, subproject designs, and compensation rates for land acquisition and resettlement; (ii) changes in economic benefit estimates resulting from design revisions; and (iii) the extension of the construction periods for most subprojects from 2–5 years to 3–8 years. The latter spread the capital costs over longer periods than planned. The detailed economic reevaluation is in Appendix 9. The project could be rated *highly efficient* based on investment efficiency alone, but the less-than-efficient process partly offsets this strong performance. Completion was delayed by 21 months (para. 19), and the LPMOs' payments to the two agencies for external resettlement M&E were not made in a timely manner (para. 48).

D. Preliminary Assessment of Sustainability

34. Based on the probability that its outcome and outputs will last for their economic life, the project is rated *most likely sustainable*.

35. A series of measures exist for the operation and maintenance (O&M) of the flood warning and management systems, the hydrological, water level monitoring, and rainfall stations, and the flood protection structures established or constructed under the project. The Hunan Provincial Flood Control and Drought Relief Headquarters (FCDRH) established formal procedures for the O&M of Hunan's flash flood disaster monitoring, warning, and management systems.¹⁴ The HPG made city and county hydrological bureaus, meteorological bureaus, and other relevant agencies formally responsible for the O&M of the cities' and counties' water level monitoring and rainfall stations. The Standing Committee of National People's Congress of Hunan Province issued specific regulations on how O&M of provincial hydrological and rainfall stations should be conducted. The Hunan FCDRH conducted a training course on flood forecasting and warnings for about 900 operators of city and county FCDRHs. Another training course on flood warning and flood disaster prevention was organized and implemented under the project. The HPG has a flood control security fund that allocates funding for the O&M of the systems, stations, and structures.¹⁵ An urban maintenance and construction tax in Hunan also funds the O&M of the flood protection structures.¹⁶ The flood control regulations of the

¹⁴ The procedures require city and county financial bureaus to allocate adequate budgets for the O&M of the systems and made water resources bureaus, meteorological bureaus, media bureaus, FCDRHs, and other relevant agencies of Hunan's cities and counties responsible for the O&M.

¹⁵ According to provisions issued by the HPG on 31 August 1994, businesses must pay 0.08%–0.20% of their sales or revenues to the flood control security fund. Insurance companies must pay 1% of annual property insurance premiums to the flood control security fund. Of the funds collected, 10% are allocated to the province and 90% to the Hunan's cities and counties.

¹⁶ The tax is levied on all enterprises and individuals paying value-added taxes, business taxes, and consumption taxes at rates of 7% of the value-added tax, 5% of the business tax, and 1% of the consumption tax. In most of the Hunan's cities and counties, 15% of the urban maintenance and construction tax is earmarked for flood protection.

subproject cities and counties require strict routine inspection of the structures.

36. The completion review's affordability analysis shows that the city and county governments have sufficient resources available to repay the ADB loan and pay O&M costs for the structures (Appendix 9). In addition, this analysis conservatively excluded not yet quantifiable funding from other possible financing sources. The PWRD and city and county water resources bureaus, which are responsible for the O&M of the systems, stations, and structures, are quite stable in terms of human resources, finance, organizational arrangements, and governance. The systems, stations, and structures will have no adverse environmental or social impacts and will continue to mitigate flood risks.

E. Impact

37. **Environment.** Details on environmental management are in Appendix 10. ADB classified the project as category B for environment. During project preparation, (i) an IEE, including an EMP, was prepared for each of the eight core subprojects; (ii) a consolidated IEE, a consolidated summary IEE, and the CEMP were prepared; and (iii) an EAMF was prepared outlining the noncore subproject selection criteria and approval process and institutional arrangements for environmental assessment. During implementation, 27 IEEs were prepared for noncore subprojects that followed the EAMF and were approved by ADB.

38. The environmental impacts of the project overall were localized and temporary. The project areas were fully landscaped after works were completed and well-maintained. The operations of the constructed flood protection structures will have no significant negative impacts on the water levels or water quality in rivers or on terrestrial or aquatic flora and fauna.

39. The CEMP and EAMF required two types of monitoring: (i) compliance monitoring by inspection companies to monitor environmental management practices of contractors; and (ii) ambient monitoring of air, water, and noise by LEPBs. For the compliance monitoring, the LPMOs engaged construction supervision companies, and these companies monitored the environmental management activities of the contractors as part of construction supervision. LEPBs undertook the ambient monitoring for two subprojects under contracts with the LPMOs and as part of their routine work for the other 33 subprojects. However, the timing, frequency, and locations of the ambient monitoring of some subprojects were inadequate, did not fully capture the environmental impacts of the construction activities, and were not fully consistent with the CEMP.

40. Most of the quarterly progress reports submitted by the PPMO to ADB failed to cover the performance by contractors on environmental protection, even though this was required by the project agreement. The PPMO submitted 40 environmental monitoring reports to ADB. They covered 27 of the 35 subprojects and were all disclosed on the ADB website. This fell short of the compliance with the EAMF and the CEMP that was required under the project agreement.¹⁷

41. ADB provided the PPMO and LPMOs with support to improve environmental monitoring and reporting. One example was the inclusion of an ADB environment specialist in field missions. Consulting services were also made available. These efforts were only partly successful. The PPMO cited several reasons for only partial compliance with the project's environmental covenants. It said that it considered the environmental impacts not significant,

¹⁷ The EAMF required the PPMO to submit semiannual reports to ADB on the progress of implementation of subproject EMPs, and the CEMP required the PPMO to submit annual compliance and ambient monitoring program summary reports to ADB.

since ADB had classified the project under environmental category B. In addition, it contended that some LEPBs had not been consulted by the implementing agencies during project preparation, and that this resulted in incorrect information in the IEEs, as well as a low degree of motivation on LEPBs to monitor and address the impacts of construction activities. Other reasons cited for the partial compliance were (i) the PPMO's difficulties in coordinating the large number of LPMOs, particularly for data and information collection and reporting; (ii) insufficient consulting services for project management support; (iii) uneven levels of monitoring and reporting capacity among the LPMOs and LEPBs; (iv) LPMOs' choice to mainly follow domestic procedures rather than those agreed on with ADB; and (v) a gap between the required and actual financing for environmental management for some subprojects. The PPMO also stated that ADB's requirements for environmental reporting in the project agreement were unclear. The project agreement required monitoring to be conducted as described in the EAMF and the CEMP, but it did not directly require the submission of environmental reports separately from project progress reports. This differed from the project agreement text regarding involuntary resettlement and ethnic minority development, which clearly stated the requirement for the submission of semiannual M&E reports on land acquisition and resettlement and annual M&E reports on ethnic minority development. The PPMO cited differences in the requirements for environmental reporting described in the EAMF and the CEMP, although both were meant to be complied with. The EAMF required reports semiannually, and CEMP required them annually.

42. **Land acquisition and resettlement.** Details on land acquisition and resettlement are in Appendix 11. Resettlement plans were prepared for the eight core subprojects by a design institute with assistance from PPTA consultants and an ADB team. ADB approved these plans prior to appraisal. The resettlement plans for the 27 noncore subprojects were drafted by the design institute and submitted to ADB during 2007–2009, with ADB's approvals during 2007–2015.¹⁸ The finalization of the plans and ADB's approval and disclosure took an average of 18 months. The fastest took 12 months. ADB had anticipated this sector project's risk of taking long time for preparation and approval of resettlement plans for the 27 noncore subprojects, due to huge volume of centralized documentation.¹⁹ This risk was not adequately resolved, despite considerable efforts by the design institute, PPMO, and ADB team.

43. According to the resettlement plans, the 35 subprojects would require the permanent acquisition of 861.9 hectares (ha) of land, including 707.2 ha of collectively owned land. In addition, 553,514 square meters of residential houses would need to be demolished and 4,530 households relocated. Demolition would affect 241 enterprises and institutions. A total of 18,886 people were expected to be affected. The actual figures at completion were 691.1 ha of permanent land acquisition, including 524.1 ha of collectively-owned land; 373,970 square meters of residential house demolition; relocation of 3,090 households; and demolition impacts on 178 enterprises and institutions. A total of 13,427 of people were affected.

44. The 35 city and county governments had the capacity and the past experience needed to implement the land acquisition and resettlement in line with the PRC's domestic requirements and a good understanding of the ADB's substantive policy requirements, which were set out in the resettlement plans. The city and county government agencies supervised the land

¹⁸ ADB approved the resettlement plans, including due diligence reports, for five noncore subprojects (Baojing, Fenghuang, Ningyuany, Xiangtan, and Zhongfang counties) on a post-review basis on 28 January 2015, after the loan closing date of 31 December 2014.

¹⁹ The LPMOs had staffing and budgetary limitations and lacked experience with ADB's projects. This made it difficult for them to prepare resettlement plans. The HPG engaged a design institute that had experience in land acquisition and resettlement planning for domestic projects and a World Bank hydropower project to do this work. The institute submitted the draft plans to ADB on time, but they lacked the quality needed for immediate ADB's approval. The institute then took far too long to respond to ADB's comments and requests for improvements.

acquisition and resettlement, and concentrated on technical, financial, and administrative matters. ADB required that the project have external monitors to ensure that ADB's policies on involuntary resettlement were met.

45. The city and county governments carried out consultations with the affected people early on in the planning process while preparing the eight core subprojects. The city and county governments continued this in the planning of the 27 noncore subprojects and throughout implementation of all 35 subprojects. The ADB team's main concern, other than adherence to its procedural requirements, was that the compensation standards be adequate. However, city or county government increased the compensation rates significantly, based on local market prices for some subprojects. People were made very aware of the compensation rates and their rights via local media and websites. This intensified and prolonged the negotiations for compensation and resettlement. Urgent works had to be implemented at costs much higher than the original estimates, provided local funding could be raised. Less urgent civil works were cancelled or redesigned to reduce the impacts and costs of land acquisition and resettlement. The affected people were thus key actors in the resettlement process and decision making. No compensation was made at rates lower than those stipulated in the resettlement plans.

46. Although the areas of land lost to the subprojects was significant, the impact on the livelihoods of rural households was not very severe. This was due to the linear alignment of the works, which left much of the lands unaffected, as well as the fact that very little of the rural households' income came from farming. The demolition of peoples' homes was the most serious effect, but all 3,090 households that required resettlement have moved into new houses, with most now having similar or improved living conditions and environments. It was found through external M&E that the affected people are very satisfied with their new housing, since their former homes had been at risk of regular flooding.

47. The land acquisition and resettlement costs for the subprojects totaled CNY805 million, which was 87.3% of the original estimate. On average, land acquisition and resettlement costs made up 20% of the project's structural flood protection component costs. If the originally planned scope of works had been implemented, land acquisition and resettlement costs would have increased by 50%–100% and would have amounted to 25%–35% of the structural flood protection component costs.

48. The external resettlement M&E required by ADB encountered problems. The PPMO engaged two independent agencies to carry out the M&E. One submitted 10 M&E reports during 2007–2015 and the other 8 reports during 2008–2015, but this was not done semiannually during the resettlement plans' implementation as was required by the project agreement. This was because many LPMOs did not pay the two agencies in a timely manner as was required by the contracts between the PPMO and the two agencies.²⁰ In addition, the PPMO and the agencies did not increase the contract prices when the loan closing date of the project was extended and times of M&E and reporting to be conducted increased accordingly, since many LPMOs were reluctant to increase the payments under the contracts. The PPMO said one reason for LPMOs' reluctance to pay to the agencies was the fact that the agencies submitted reports to the PPMO and ADB, but did not provide the LPMOs with the reports or feedback.

49. **Ethnic minority development.** Details on ethnic minority development are in Appendix 12. Nine subprojects were located in a city and counties where ethnic minorities make up a

²⁰ Each of the two contracts between the PPMO and the two independent agencies included subcontracts, each of which was concluded between the LPMO and the agency. Each subcontract required payments from the LPMO to the agency.

large proportion of the population. On average, the per capita gross domestic product in this city and these counties is only 60% of the provincial average. They also show considerable differences from the other cities and counties involved in the project in terms of income, education, and jobs. An ethnic minority development framework was prepared during project preparation, and EMDPs were prepared for all nine subprojects, including one for the Sangzhi County core subproject during project preparation and eight for the remaining subprojects during implementation.²¹ The EMDPs were tailored to the circumstances in each subproject city or county but compatible with national ethnic minority policy objectives. To mitigate negative impacts of the subprojects, the EMDPs aimed mainly to (i) protect minority communities from being disturbed by construction works and respect religious freedoms, taboos, customary languages, production patterns, living habits, and house customs; (ii) avoid or minimize land acquisition and house demolition, and provide compensation and resettlement measures to ensure displaced persons would be better off afterwards; and (iii) prevent the spread of communicable diseases. To enhance the project's benefits for the communities, the EMDPs sought to (i) encourage women to participate in meetings and project implementation; (ii) provide microcredit for ethnic minorities; (iii) support the development of tourism by the city and county governments; (iv) train people affected by subprojects in new skills, (v) deliver other support, including tax subsidies for small businesses; and (vi) provide community members with temporary and permanent employment. The use of an external M&E agency and its submission of seven M&E reports guided the LPMOs in improving consultation, implementing the subprojects, and resolving problems in culturally appropriate ways.

50. **Poverty and socioeconomic impact.** The project had significant impacts on regional socioeconomic development and poverty reduction by (i) reducing flood risks for about 16 million beneficiaries in the project areas, including poor and vulnerable people; (ii) improving living conditions for affected people through compensation and rehabilitation; and (iii) increasing income and employment opportunities, particularly for the poor. Socioeconomic conditions in the project areas improved rapidly during and after the project implementation. The number of industrial and commercial enterprises in the project areas increased from 522,569 in 2006 to 750,950 in 2015. By 2015, the land value for commercial and industrial purposes in the project areas had increased by 65% on average from 2005. The incidence of urban poverty in the 35 subproject cities and counties declined from a range of 1.1%–12.7% in 2003 to 0.6%–10.9% in 2013. Rural poverty decreased in the same areas from 1.3%–26.6% in 2003 to 1.1%–23.4% in 2013.

IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

A. Overall Assessment

51. The project is rated *successful* overall based on its ratings on the four core evaluation criteria following the methodology provided in the *Guidelines for the Evaluation of Public Sector Operations*.²² It was rated *relevant* despite some deficiency in the implementation arrangements, because the intended project outcome fully aligned with the PRC government's strategic shift and long-term development goals and with ADB's operational focuses and policy. Its rating of *effective* was based on the achievement of the project's intended outcome and the substantial achievement of the output targets, notwithstanding the inadequate external resettlement M&E reporting and environmental reporting. It was rated *efficient*, considering its high efficiency as an investment but a less than efficient implementation process. The project's *most likely*

²¹ These eight non-core subprojects were in Jishou City and the counties of Baojing, Cili, Fenghang, Jianghua, Jiangyong, Luxi, and Shimen.

²² ADB. 2016. *Guidelines for the Evaluation of Public Sector Operations*. Manila.

sustainable rating takes several factors into consideration: a series of reliable O&M measures, the capacity and institutional stability of the executing and implementing agencies, sound potential O&M financing sources, the positive results of the completion review's fiscal affordability analysis, the absence of adverse environmental and social impacts, and expected continuous flood risk mitigation.

B. Lessons

52. The major lessons were as follows:

- (i) **Sector project implementation challenge.** This sector project with 35 subprojects presented an implementation challenge, particularly for land acquisition and resettlement. This included the difficulties of preparing the resettlement plans of 27 noncore subprojects during project implementation and ensuring external M&E (paras. 42 and 48).
- (ii) **Inadequate support for project management.** The design allowance for consultant inputs to support project management was inadequate (para. 12). Adequate loan proceeds should have been earmarked for these services, considering the scale and complexity of the project and the capacities and experience of the PPMO and LPMOs.
- (iii) **Shortcomings in environmental management.** The LEPBs should have been closely consulted during project preparation. ADB should have assessed the capacities of the LPMOs and LEPBs for programming and implementing environmental monitoring in more detail. ADB should have provided more regular guidance to the PPMO and conducted more frequent follow-ups regarding the implementation of the CEMP and the EMPs. This was particularly important for ensuring that the environmental management activities required by ADB but not by domestic standards were actually carried out. The requirements for environmental monitoring, particularly the frequency of reporting, should have been spelled out precisely in the project agreement (para. 41).
- (iv) **Incomplete external monitoring and evaluation of resettlement.** The LPMOs committed during project preparation to pay independent agencies for external resettlement M&E but became reluctant to do so. As a result, the M&E reporting was less frequent than required. ADB should have financed the M&E with loan proceeds, to ensure the M&E to be carried out without relying on LPMOs' payments to the agencies. The two agencies should have provided the LPMOs with reports or feedback to establish close cooperation with them (para. 48).
- (v) **Issues caused by related urban development plans.** The implementation of some subprojects was delayed due to changes in the designs to be consistent with related urban development plans, followed by the contract variations made necessary by these redesigns. It also meant that the affected elements of the subprojects would have to be carried out only when the related urban development plans were to be implemented (footnotes 8–10). Related urban development plans should have been fully considered when subprojects were designed.
- (vi) **Offsetting weakness in low bids.** ADB's introduction of a stronger performance

security requirement to the standard NCB document for works after slow performance by the initial contractors proved effective in preventing similar problems in later subprojects. The new requirement weeded out bidders whose bids were too low to actually cover the costs of an adequate delivery of works (para. 26).

C. Recommendations

1. Project Related

53. **Future monitoring.** To ensure the project's sustainability, it is recommended that the HPG and/or local governments continue to monitor the related O&M programs over the long term. Monitoring should ensure that facilities financed by the project are properly maintained and remain operational. It is also suggested that the HPG and/or local governments assess the project's effect on flood mitigation, as well as determine its statistical impact on income and poverty.

54. **Timing of the project performance evaluation report.** It is recommended that a performance evaluation review be conducted in 2019 or later. This will allow at least 5 years from the physical completion of the project to properly evaluate its effect on flood mitigation, income, and poverty using accumulated statistical data.

2. General

55. The following are recommendations for the design and implementation of future projects.

- (i) If it is expected a sector project will include many noncore subprojects, ADB should carefully provide arrangements for preparing required associated documents, particularly resettlement plans, based on detailed capacity assessment of agencies involved in the arrangements.
- (ii) During project preparation, ADB should carefully investigate the actual ability of executing and implementing agencies to raise funds even if commitments are made to deliver this funding, and consider the risk that this may not happen.
- (iii) ADB or the executing agency should provide consulting services for project management support that is adequate for the scale and complexity of a project and the need to supplement the capacities and experience of the executing and implementing agencies. Preferably, the ADB loan should fund these consulting services. This heads off the risk that was encountered in this project and has been frequent in past ADB-funded operations that the executing and/or implementing agencies will have difficulty financing these services themselves.
- (iv) ADB should fund the external M&E of land acquisition and resettlement rather than risk seeing the executing and/or implementing agencies' fail to provide the necessary funding themselves. This occurred in this project and has been a common problem in past ADB operations.
- (v) ADB should require that independent agencies undertaking external M&E of land acquisition and resettlement should provide reports and/or feedback not only to ADB and executing agencies but also to implementing agencies that carry out land acquisition and resettlement. This will establish closer cooperation between

the M&E and the implementing agencies.

- (vi) The arrangements for programing and implementing environmental monitoring need to be adequate and based on close consultation with agencies to be involved in the monitoring and a detailed assessment of their capacities. When preparing projects that will involve a large number of subprojects at the city and county levels, ADB and the executing and implementing agencies should consider (a) contracting one independent environmental monitoring agency at the provincial level, and (b) including the monitoring in the tasks of consultants for project management support.
- (vii) When ADB and domestic standards differ—as they did in the case of environmental requirements in this project—ADB should not only provide regular guidance during implementation on ADB's requirements to the executing and/or implementing agencies, but also follow up frequently to make sure that they are actually being met.
- (viii) Project agreement should leave no loopholes or room for misunderstanding by spelling requirements out precisely rather than referring to requirements set in other documents (as was done with cross-references to the EAMF and CEMP in this project).
- (ix) ADB should cause executing and/or implementing agencies to always consider the possibility that wider programs and plans might affect the preparation and implementation of a particular subproject before finalizing each design. This should prevent the kind of scope changes and delays encountered in this project due to the subsequently discovered conflicts with urban development plans.
- (x) When it is anticipated that bidders may submit bids too low to cover the actual costs of the works involved, ADB should consider increasing the performance security requirement in the contracts particularly for NCB for works. This should cover the risk of default by contractors that have underbid.
- (xi) The initial DMFs of sector projects for which noncore subprojects have not yet been identified are indicative only. The DMFs for these projects should be updated during project implementation to reflect the output targets and indicators of noncore subprojects as they are designed.
- (xii) Although it is unavoidable that a project leading group will include senior officials of various agencies with wide responsibility and tight schedules to coordinate policy aspects and advise the executing and implementing agencies on project implementation, availability for the regular meetings should be considered when members are selected.

PROJECT DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Achievements	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>Impact Sustainable and inclusive socioeconomic growth in flood-prone areas of Hunan Province enhanced</p>	<p>Number of newly established industrial and commercial enterprises in the project areas increases compared with base year 2006</p> <p>Land values for commercial and industrial purposes in project areas increases by at least 20% over 2005 levels by 2012</p> <p>Urban poverty incidence in the project areas^a is reduced compared with 2003 incidence of 6.7%</p>	<p>Number of industrial and commercial enterprises in the project area increased from 522,569 in 2006 to 750,950 in 2015</p> <p>Land values for commercial and industrial purposes in project areas increased by 65% on average over 2005 levels by 2015</p> <p>Urban poverty incidence in the 35 cities and counties where the 35 subprojects were implemented was reduced from 3.6% in 2003 to 2.8% in 2013</p>	<p>Registrar of Companies</p> <p>Municipal and County Land Resource Bureau</p> <p>Price Bureau</p> <p>Hunan Provincial Statistical Yearbook</p>	<p>Assumptions</p> <ul style="list-style-type: none"> Targeting flood protection in growth centers of the upper reaches of river basins increases investment in business and property in the project areas Increased investment in protected growth centers increases employment opportunities for urban and rural poor <p>Risk</p> <ul style="list-style-type: none"> Complacency in protected areas increases risks and losses from above average floods
<p>Outcome Flood protection for strategic and priority flood-prone areas in the upper reaches of the four main river basins in Hunan Province improved</p>	<p>Annualized flood damage and disaster relief costs reduced in participating cities as a result of increased standards for flood protection works and improved flood emergency preparedness</p> <p>Direct economic losses from floods and waterlogging reduced compared with current average losses</p>	<p>Annual flood damage and disaster relief cost in the project area reduced from CNY120.8 million in 2005 to CNY82.0 million in 2015</p> <p>Annual average direct economic loss caused by floods and waterlogging in the project area reduced from CNY802.4 million in 2005 to CNY234.8 million in 2015</p>	<p>Historical flood records from Hunan Statistical Yearbooks</p> <p>Hunan Flood Control and Drought Relief Headquarters</p>	<p>Assumption</p> <ul style="list-style-type: none"> The Government undertakes complementary measures by implementing the integrated flood management strategy and plans <p>Risks</p> <ul style="list-style-type: none"> Infrastructure design standards are unable to mitigate heavy floods Insufficient interagency coordination leads to incohesive implementation of structural and nonstructural components of the flood management strategy
<p>Outputs 1. Nonstructural flood management systems: operational flood warning and management systems for up to 35 municipalities and counties linked to the provincial flood warning and</p>	<p>Increased warning time against potential floods in project area (current warning time is a few hours to one day)</p> <p>Forecasting and warning data more frequently accurate</p>	<p>Warning time against potential floods in project area increased to 1–3 days before flooding</p> <p>Accuracy of manual flood forecasting increased from pre-system levels of 70%–85% to post-system levels of 85%–90%</p>	<p>Hunan Hydrological Bureau</p> <p>Hunan Hydrological Bureau</p>	<p>Assumptions</p> <ul style="list-style-type: none"> Local governments have staff available to manage, monitor, and maintain systems during and after implementation Province leads and participates in process of strengthening capacity at the municipal and county levels <p>Risks</p> <ul style="list-style-type: none"> Coordination of nonstructural

Design Summary	Performance Targets/Indicators	Achievements	Data Sources/ Reporting Mechanisms	Assumptions and Risks
management system				measures between city-level and river basin and/or provincial level is not realized
<p>2. Structural flood protection, resettlement, and environmental management: flood protection works are completed in priority locations as part of Hunan's River Basin Flood Control Plan and the 11th Hunan Provincial Five-Year Plan and in compliance with PRC regulations and ADB safeguard policies</p> <p>3. Project management and capacity building: operational and strengthened project management and monitoring systems</p>	<p>Flood-control level of county-level cities improved to 1 in 20-year-return flood from below 1 in 5-year return flood recurrence by end of project</p> <p>Flood-control level of municipal cities improved to 1 in 50 or 100-year-return flood by end of project</p> <p>Satisfaction level of the 20,133 relocated persons restored to pre-resettlement levels in terms of income and livelihood</p> <p>Percentage of EMP monitoring targets achieved</p> <p>Timely and informative reporting of LPMOs that reflects accurate and on-time project implementation in line with agreed assurances</p> <p>Domestic systems-based project</p>	<p>Flood control level of county-level cities improved to 1 in 20-year-return flood from below 1 in 5-year return flood recurrence by 2015</p> <p>Flood-control level of municipal cities improved to 1 in 50 or 100-year-return flood from below 1 in 20-year-return flood by 2015</p> <p>Monitoring confirmed that the incomes and livelihoods of most affected persons satisfactorily restored to pre-resettlement levels</p> <p>Surface water environmental quality standards (Class III) achievement rates: Ph—100%, SS—100%, COD—94%, BOD—96%, TP—87%</p> <p>Class II environmental air quality standards (daily average) achievement rates: TSP—56%, NO₂—96%, SO₂—100%</p> <p>Class II urban area environmental noise standards achievement rates: day—73%, night—81%</p> <p>24 quarterly progress reports were submitted to ADB based on LPMOs' reporting. However, most reports lacked the results of environmental monitoring that were required under the project agreement</p> <p>Domestic systems-based project</p>	<p>Provincial Water Resources Bureau</p> <p>Provincial Water Resources Bureau</p> <p>Household surveys, government, and third-party resettlement M&E reports</p> <p>Local government environmental protection bureau monitoring reports, third-party environmental M&E reports, records of subproject compliance with PRC and ADB safeguard requirements</p> <p>Subproject management and monitoring reports</p> <p>ADB's PPRs</p> <p>Annual work plans and budgets</p> <p>Project M&E system records</p>	<ul style="list-style-type: none"> Insufficient counterpart budget for civil works, resettlement, and environment management at project start-up (see mitigation measure under Activity 4.2) Trained and experienced project personnel do not remain with flood management related agencies or divisions

Design Summary	Performance Targets/Indicators	Achievements	Data Sources/ Reporting Mechanisms	Assumptions and Risks
	management and monitoring system, including PPMS operationalized	management and monitoring system was operationalized, except for environmental monitoring systems		
4. Flood management sector planning: selected sector assessments and planning to support development of integrated flood management plans (grant financed through the advisory technical assistance)	Basin-wide flood warning system development needs assessed; flood insurance appraised with support from TA; next actions for inclusion in future flood management plan agreed upon by key provincial authorities by Year 2008	With support from the TA, basin-wide flood warning system development needs were assessed, flood insurance was appraised, and next steps for inclusion in future flood management plan were agreed upon by key provincial authorities, by 2013	Provincial Water Resources Department and advisory TA reports Provincial sector plan documents	
Key Activities with Milestones		Achievements		
<p>1. Flood Warning and Response</p> <p>1.1. Train staff in municipal and county-level cities to operate flood warning systems and plan for and manage flood emergencies (by June 2008)</p> <p>1.2. Establish or upgrade hydrological stations in up to 35 subproject locations and link to provincial data acquisition system (by June 2008)</p> <p>1.3. Improve data management, flood forecasting, and decision support systems for overall flood management in up to 35 subproject locations (by June 2008)</p> <p>2. Flood Protection Works</p> <p>2.1. Prepare feasibility study reports for each selected non-core subproject</p> <p>2.2. Prepare detailed engineering designs for each selected subproject</p> <p>2.3. Acquire land where needed to accommodate flood protection civil works, temporarily or permanently relocate affected persons, and provide compensation and other social and economic rehabilitation measures for affected persons in accordance with PRC laws and regulations and ADB resettlement and indigenous peoples safeguard policies</p> <p>2.4. Prepare initial environmental assessments and EMPs for each non-core subproject in accordance with PRC laws and regulations and ADB environmental safeguard policies</p> <p>2.5. Construct flood protection works for up to 35 subprojects, including rehabilitation and construction of dikes, upgrading and construction of sluice gates, upgrading and construction of pumping stations, and upgrading and construction of diversion channels (according to subproject phasing)</p>		<p>1. Flood Warning and Response</p> <p>1.1. About 900 staff in municipal- and county-level cities were trained (by April 2013).</p> <p>1.2. 184 water level, 969 rainfall, and 495 hydrological stations were constructed, and the flood warning and management system for 35 cities and counties linked to the provincial flood warning platform established (by December 2014).</p> <p>1.3. The flood warning and management system for 35 cities and counties linked to the provincial flood warning platform had improved data management, flood forecasting, and decision support system for overall flood management by December 2014.</p> <p>2. Flood Protection Works</p> <p>2.1. A feasibility study was prepared for each selected non-core subproject.</p> <p>2.2. A detailed engineering design was prepared for each selected subproject.</p> <p>2.3. For flood protection civil works, lands were acquired and compensation and other social and economic rehabilitation measures were provided to affected persons, in accordance with PRC laws and regulations and ADB resettlement and indigenous peoples safeguard policies.</p> <p>2.4. An initial environmental assessment report, including an EMP, was prepared for each non-core subproject, as required.</p> <p>2.5. Flood protection structures, including 399.2 km of embankments and flood walls, sluice gates, pumping stations, and diversion channels, were constructed or rehabilitated under 35 subprojects.</p>		

Design Summary	Performance Targets/Indicators	Achievements	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>3. Project Management</p> <p>3.1. Establish and equip provincial and local project management offices in 35 cities (on a rolling basis according to subproject phasing)</p> <p>3.2. Train key government staff at municipality and county-level cities to plan, design, and implement and monitor structural and nonstructural flood works according to PRC regulations and ADB safeguards (on a rolling basis according to subproject phasing)</p> <p>3.3 Supervision and monitoring of subproject implementation by provincial and local project management offices</p> <p>3.4 Strengthen provincial project management capacity (technical, financial, administration, and implementation) for annual work planning and the successful implementation and monitoring and evaluation of the Hunan Flood Management Sector Project according to PPMS principles (throughout project implementation)</p> <p>4. Sector Planning</p> <p>4.1. Review and analysis of the province's existing flood warning system and facilities in one mountain river basin, existing flood warning facilities and optimize their design for hydrometeorological data collection and flood preparedness for inclusion in the 12th 5-year flood management plan (by June 2008)</p> <p>4.2. Feasibility assessment of providing flood insurance to rural and urban people through a pilot study in one project area for consideration in the 12th five-year plan (by June 2008)</p>				<p>3. Project Management</p> <p>3.1. Provincial and local project management offices were established in 35 cities and counties in 2006.</p> <p>3.2. Six training courses on project and environmental management, two domestic study tours, and one overseas study tour were carried out for key government staff at municipality and county-level cities</p> <p>3.3. Provincial and local project management offices conducted regular supervision and monitoring of subproject implementation</p> <p>3.4. Provincial project management capacity for annual work planning and implementation and monitoring and evaluation of the project was strengthened, with support from consultants engaged under the TA.</p> <p>4. Sector Planning</p> <p>4.1. With support from the TA, basin-wide flood warning system development needs were assessed.</p> <p>4.2 With support from the TA, flood insurance was appraised.</p>
<p>Inputs</p> <p>ADB:</p> <p>ADB project loan of \$200.0 million.</p> <p>Flood warning and response—\$10.5 million</p> <p>Flood protection works—\$185.4 million</p> <p>Project management and capacity building—\$4.1 million</p> <p>Core subproject contingencies - \$16.8 million</p> <p>Government:</p> <p>Counterpart financing of \$297.4 million.</p> <p>Cofinancing: Grant attached TA from Spanish Cooperation Fund for Technical Assistance: \$0.5 million</p> <p>Netherlands Trust Fund under the Water Financing Partnership Facility: \$0.06 million</p>				<p>Inputs</p> <p>ADB:</p> <p>ADB project loan of \$191.2 million.</p> <p>Flood warning and response—\$1.4 million</p> <p>Flood protection works—\$187.2 million</p> <p>Project management and capacity building—\$2.6 million</p> <p>Government:</p> <p>Counterpart financing of \$375.1 million.</p> <p>Cofinancing: Grant attached TA from Spanish Cooperation Fund for Technical Assistance: \$0.5 million</p> <p>Netherlands Trust Fund under the Water Financing Partnership Facility: \$0.06 million</p>

^a Project areas refer to the 46 counties in which the 35 subprojects were located. Fifteen of the counties are designated by the PRC government as poverty counties. The discrepancy between the number of counties and the number of subprojects arises because subprojects located in prefecture-level municipalities tend to involve more than one district or county.

^b Timing of milestones for the construction of structural measures is dependent on the phasing of the individual subprojects. Work on all subprojects is expected to begin by project year 3.

ADB = Asian Development Bank, BOD = biochemical oxygen demand, CNY = yuan, COD = chemical oxygen demand, EMP = environmental management plan, km = kilometer, LPMO = local project management office, M&E = monitoring and evaluation, NO₂ = nitrogen dioxide, PPMS = project performance management system, PPR = project performance report, PRC = People's Republic of China, SO₂ = sulfur dioxide, SS = suspended solids, TA = advisory technical assistance, TP = total phosphorus, TSP = total suspended particulate.

Source: Asian Development Bank.

STRUCTURAL FLOOD PROTECTION

Subproject	Level of City/County	Date of ADB's Approval				Lenth of Flood Protection Structures Constructed (km)	Flood Protection Level Before and After Subproject			
		FSR	IEE	RP			EMDP	Before	After	
				Revision of RP						
Core	Leiyang City	County-level			-	-	5.6	1 in 5 years	1 in 20 years	
	Sangzhi County	County-level			21-7-09	During project preparation	9.1	1 in 5 years	1 in 20 years	
	Chenxi County	County-level			-	-	1.9	1 in 5 years	1 in 20 years	
	Yongzhou City	Prefecture-level	During project preparation		21-7-09	-	36.5	1 in 5 years	1 in 50 years	
	Xinhua County	County-level			21-7-09	-	12.2	1 in 5 years	1 in 20 years	
	Wugang City	County-level			21-7-09	-	16.2	1 in 5 years	1 in 20 years	
	Loudi City	Prefecture-level			21-7-09	-	13.0	1 in 20 years	1 in 50 years	
	Huaihua City	Prefecture-level			21-7-09	-	23.0	1 in 10 years	1 in 50 years	
Non-Core	Chenzhou City	Prefecture-level	6-6-07	11-10-07	16-1-08	-	-	19.4	1 in 10 years	1 in 50 years
	Jishou City	Prefecture-level	6-7-07	11-10-07	16-1-08	-	24-11-11	22.6	1 in 20 years	1 in 50 years
	Youxian County	County-level	6-6-07	11-10-07	16-1-08	-	-	6.8	1 in 5 years	1 in 20 years
	Cili County	County-level	6-7-07	11-10-07	16-1-08	-	24-11-11	13.9	1 in 5 years	1 in 20 years
	Shimen County	County-level	6-7-07	11-10-07	16-1-08	-	24-11-11	17.0	1 in 5 years	1 in 20 years
	Lengshuijiang City	County-level	6-7-07	11-10-07	16-1-08	-	-	8.3	1 in 5 years	1 in 20 years
	Shaoyang City	Prefecture-level	6-7-07	11-10-07	27-9-07	-	-	4.8	1 in 5 years	1 in 50 years
	Longhui County	County-level	6-7-07	11-10-07	27-9-07	-	-	8.2	1 in 5 years	1 in 20 years
	Jiangyong County	County-level	6-7-07	11-10-07	27-9-07	-	24-11-11	6.7	1 in 5 years	1 in 20 years
	Xupu County	County-level	6-7-07	11-10-07	27-9-07	-	-	3.3	1 in 5 years	1 in 20 years
	Shuangfeng County	County-level	6-7-07	11-10-07	27-9-07	-	-	9.8	1 in 5 years	1 in 20 years
	Qiyang County	County-level	6-7-07	11-10-07	27-9-07	-	-	7.1	1 in 5 years	1 in 20 years
	Jianghua County	County-level	6-7-07	11-10-07	27-9-07	-	24-11-11	3.9	1 in 5 years	1 in 20 years
	Hengyang City	Prefecture-level	6-7-07	11-10-07	27-9-07	-	-	42.6	1 in 10 years	1 in 100 years
	Xintian County	County-level	11-10-07	12-10-09	6-11-09	-	-	19.0	1 in 5 years	1 in 20 years
	Ningyuan County	County-level	11-10-07	12-10-09	28-1-15 ^a	-	-	8.1	1 in 5 years	1 in 20 years
	Zhongfang County	County-level	11-10-07	12-10-09	28-1-15 ^a	-	-	4.6	1 in 5 years	1 in 20 years
	Zhuzhou City	Prefecture-level	11-10-07	12-10-09	6-11-09	-	-	12.7	1 in 10 years	1 in 100 years
	Xiangtan City	Prefecture-level	11-10-07	12-10-09	28-1-15 ^a	-	-	17.8	1 in 5 years	1 in 50 years
	Liling City	County-level	11-10-07	12-10-09	6-11-09	-	-	4.3	1 in 5 years	1 in 20 years
	Fenghuang County	County-level	11-10-07	12-10-09	28-1-15 ^a	-	24-11-11	5.5	1 in 5 years	1 in 20 years
	Baojing County	County-level	11-10-07	12-10-09	28-1-15 ^a	-	24-11-11	2.7	1 in 5 years	1 in 20 years
	Hengyang County	County-level	11-10-07	12-10-09	24-11-09	-	-	5.6	1 in 5 years	1 in 20 years
	Zhuzhou County	County-level	11-10-07	12-10-09	24-11-09	-	-	8.3	1 in 5 years	1 in 20 years
Lianyuan City	County-level	30-6-08	12-10-09	24-11-09	-	-	11.1	1 in 5 years	1 in 20 years	
Shaodong County	County-level	11-10-07	12-10-09	24-11-09	-	-	5.1	1 in 5 years	1 in 20 years	
Luxi County	County-level	30-6-08	12-10-09	6-11-09	-	24-11-11	2.7	1 in 5 years	1 in 20 years	
Total							399.17	-	-	

ADB = Asian Development Bank, EMDP = ethnic minority development plan, FSR = feasibility study report, IEE = initial environmental examination, km = kilometer, RP = resettlement plan.

^a For these five subprojects, due diligence reports were also prepared and approved by ADB, since land acquisition started before ADB's approval of the RPs.

Sources: Asian Development Bank and a project completion report submitted from the provincial project management office of Hunan Provincial Water Resources Department to Asian Development Bank.

PROJECT INVESTMENT AND FINANCING

Table A3.1: Project Investment
(\$ million)

Item	Appraisal			Actual		
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
A. Base Cost						
1. Nonstructural flood management systems	10.5	0.9	11.4	1.4	13.0	14.4
2. Structural flood protection, resettlement, and environmental management						
a. Core subprojects	43.0	77.4	120.4	52.5	87.7	140.2
b. Noncore subprojects	142.4	124.7	267.1	134.7	224.3	359.0
3. Project management						
a. Provincial project management	1.4	2.2	3.6	0.6	0.7	1.2
b. Local project management	2.7	25.6	28.3	2.0	21.7	23.8
4. Tax and duties	0.0	13.6	13.6	0.0	16.7	16.7
Subtotal (A)	200.0	244.4	444.4	191.2	364.1	555.3
B. Contingencies						
1. Physical contingencies						
a. Core subprojects	4.2	7.8	12.0	-	-	-
b. Noncore subprojects	-	-	-	-	-	-
2. Price contingencies						
a. Core subprojects	1.9	2.9	4.8	-	-	-
b. Noncore subprojects	-	-	-	-	-	-
Subtotal (B)						
C. Financing charges during Implementation	36.2	0.0	36.2	12.3	0.0	12.3
Total (A+B+C)	242.3	255.1	497.4	203.5	364.1	567.6

Source: Asian Development Bank.

Table A3.2: Project Financing
(\$ million)

Source	Appraisal		Actual	
	Total	%	Total	%
A. Asian Development Bank	200.0	40.2	191.2	33.7
B. Government				
1. Hunan Provincial Government	2.2	0.4	3.0	0.5
2. Municipal/County Governments	295.2	59.3	373.4	65.8
Subtotal (B)	297.4	59.8	376.4	66.3
Total	497.4	100.0	567.6	100.0

Source: Asian Development Bank

PLANNED AND ACTUAL IMPLEMENTATION

No	Basin	Subproject	Planned and Actual Implementation (Excluding Land Acquisition and Resettlement)																		
			2006	2007	2008	2009	2010	2011	2012	2013	2014										
1	X	Yongzhou City																			
2	Z	Wugang City																			
3	X	Loudi City																			
4	X	Leiyang City																			
5	Y	Chenxi County																			
6	Y	Huaihua City																			
7	Z	Xinhua County																			
8	L	Sangzhi County																			
9	X	Hengyang City																			
10	X	Chenzhou City																			
11	Z	Shaoyang City																			
12	Y	Jishou City																			
13	X	Zhuzhou City																			
14	X	Youxian County																			
15	X	Hengyang County																			
16	Z	Longhui County																			
17	X	Jiangyong County																			
18	X	Xintian County																			
19	X	Ningyuan County																			
20	Y	Zhongfang County																			
21	Y	Xupu County																			
22	X	Lianyuan City																			
23	X	Shuangfeng County																			
24	L	Cili County																			
25	X	Zhuzhou County																			
26	X	Xiangtan City																			
27	X	Qiyang County																			
28	X	Liling City																			
29	L	Shimen County																			
30	Z	Shaodong County																			
31	X	Jianghua County																			
32	Y	Xinhuang County	Was not implemented.																		
33	Z	Lengshuijiang City																			
34	Y	Fenghuang County																			
35	Y	Baojing County																			
36	Y	Luxi County	Newly added during project implementation; so there is no original schedule.																		

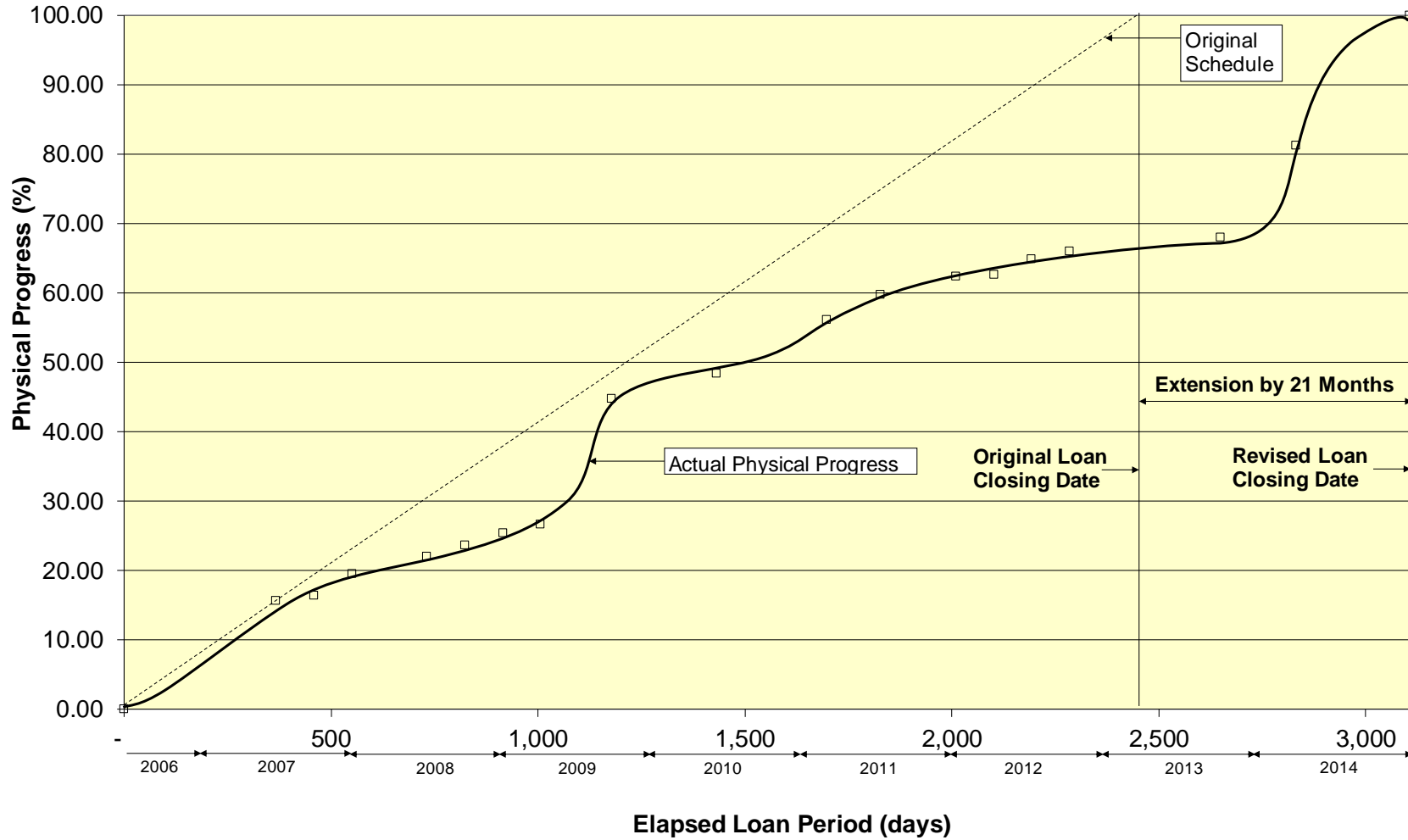
 Planned
 Actual

L = Lishui River Basin, X = Xiangjiang River Basin, Y = Yuanjiang River Basin, Z = Zishui River Basin.

Sources: ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to the People's Republic of China for Hunan Flood Management Sector Project*. Manila; Hunan Provincial Water Resources Department.

PHYSICAL PROGRESS

Figure A5.1: Physical Progress of the Project



Source: Quarterly reports submitted from the project management office of the Hunan Provincial Government to the Asian Development Bank.

STATUS OF COMPLIANCE WITH LOAN AND PROJECT COVENANTS

Covenant	Reference in Loan or Project Agreements	Status of Compliance
Loan Agreement		
Particular Covenants		
The Borrower shall cause HPG, and shall ensure that HPG causes the Local Governments, to carry out the Project with due diligence and efficiency and in conformity with sound administrative, financial, engineering, environmental and flood management practices.	Section 4.01 (a), Loan Agreement	Complied with, except for partial compliance on matters related to the project leading group, counterpart funds for external resettlement M&E, and environmental monitoring and reporting
In the carrying out of the Project and operation of the Project facilities, the Borrower shall perform, or cause to be performed, all obligations set forth in Schedule 5 to this Loan Agreement and in the Schedule to the Project Agreement.	Section 4.01 (b), Loan Agreement	Partially complied with paras. 3 and 6 of schedule of the loan agreement and paras. 10, 14, 20, and 27 of schedule to the project agreement. Complied with all the other obligations set in schedule 5 of the loan agreement and schedule of the project agreement
The Borrower shall, through HPG, make available to the Local Governments, promptly as needed, the funds, facilities, services, land and other resources which are required, in addition to the proceeds of the Loan, for the carrying out of the Project.	Section 4.02, Loan Agreement	Complied with, except for partial compliance regarding counterpart funds for external resettlement M&E
The Borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	Section 4.03, Loan Agreement	Complied with. The project was carried out, and the project facilities are being operated appropriately.
The Borrower shall take all action which shall be necessary on its part to enable HPG to perform its obligations under the Project Agreement, and shall not take or permit any action which would interfere with the performance of such obligations.	Section 4.04, Loan Agreement	Complied with. The borrower took necessary actions.
The Borrower shall exercise its rights under this Loan Agreement, and shall cause HPG and the Local Governments to exercise their rights under the Onlending Agreements in such a manner as to protect the interests of the Borrower and ADB and to accomplish the purposes of the Loan.	Section 4.05 (a), Loan Agreement	Complied with. The interests of the borrower and ADB are being protected, and the purposes of the loan were accomplished.
The Borrower, through HPG, shall cause the Local Governments to ensure that the Onlending Agreements are not assigned, amended, abrogated or waived without the prior concurrence of ADB.	Section 4.05 (b), Loan Agreement	Complied with
Project Management		
Project Executing Agency: HPG shall be the Project Executing Agency and as such shall be responsible for overall implementation of the Project.	Para 1, Schedule 5, Loan Agreement	Complied with
Project Implementing Agencies: Each Local Government participating in the Project shall bear immediate responsibility for implementing its particular subproject/s.	Para 2, Schedule 5, Loan Agreement	Complied with

Covenant	Reference in Loan or Project Agreements	Status of Compliance
<u>Project Leading Group</u> : The Project leading group established by HPG to oversee Project preparation shall continue to meet semi-annually to oversee Project implementation. The Project leading group shall be headed by the Vice Governor of Hunan Province.	Para 3, Schedule 5, Loan Agreement	Partially complied with. The project leading group did not meet semiannually.
<u>Provincial Project Management Office</u> : The PPMO shall operate from the PWRD office in Changsha and shall have day-to-day responsibility for Project implementation and primary responsibility for coordinating and directing subproject implementation. The PPMO shall include representatives from the three main line agencies responsible for the Project –PDRC, PFD, and PWRD. Other agencies and institutes shall be represented as required. The PPMO shall also be responsible for directing Project preparatory activities, assisting the LPMOs to plan and manage their subproject works, setting up and managing finances, planning, managing and monitoring the resettlement and environmental management activities, and establishing project monitoring systems. The PPMO shall coordinate and manage reporting and communication with ADB.	Para 4, Schedule 5, Loan Agreement	Complied with
<u>Local Project Management Offices</u> : Each participating Local Government shall set up a local project leading group and a LPMO to coordinate aspects of Project preparation and implementation in their respective jurisdictions.	Para 5, Schedule 5, Loan Agreement	Complied with
<u>Counterpart Funds</u> : Without limiting the generality of Section 4.02 above, the Borrower, through HPG and the Local Governments, shall ensure that the counterpart financing necessary for the Project and for covering any Project cost overrun is provided and disbursed in a timely manner to enable completion of all Project activities	Para 6, Schedule 5, Loan Agreement	Partially complied with. The LPMOs did not pay the two agencies in a timely manner. In addition, the prices of the contracts with the two agencies were not increased to reflect the extended loan closing date because the LPMOs did not want to increase their payments. This reduced the resettlement M&E reports to less than semiannual frequency.
<u>Project Review</u> : The Borrower and HPG in conjunction with ADB shall undertake a mid-term review three years after the commencement of Project Implementation. The review will include a detailed evaluation of scope, implementation arrangements, environmental management, resettlement, achievement of scheduled targets, and progress with capacity building measures.	Para 7, Schedule 5, Loan Agreement	Complied with. A midterm review mission was conducted from 1 to 25 September 2009.
Project Agreement		
Particular Covenants		
HPG shall carry out the Project with due diligence and efficiency, and in conformity with sound administrative, financial, engineering, social, environmental, and flood management practices.	Section 2.01(a), Project Agreement	Complied with, except for partial compliance on matters related to the project leading group, counterpart funds for external resettlement M&E, and environmental monitoring and reporting

Covenant	Reference in Loan or Project Agreements	Status of Compliance
In the carrying out of the Project and operation of the Project facilities, HPG shall perform all obligations set forth in the Loan Agreement to the extent that they are applicable to HPG and all obligations, as applicable, set forth in the Schedule to this Project Agreement.	Section 2.01(b), Project Agreement	Partially complied with paras. 3 and 6 of the schedule 5 of the loan agreement and paras. 10, 14, 20, and 27 of the schedule of the project agreement. Complied with all the other obligations set in schedule 5 of the loan agreement and the schedule of the project agreement
HPG shall make available, promptly as needed, the funds, facilities, services, equipment, land and other resources which are required, in addition to the proceeds of the Loan, for the carrying out of the Project.	Section 2.02, Project Agreement	Complied with, except for partial compliance regarding counterpart funds for external resettlement M&E. The LPMOs did not pay the two agencies in a timely manner. In addition, the prices of the contracts with the two agencies were not increased to reflect the extended loan closing date because the LPMOs did not want to increase their payments. This reduced the resettlement M&E reports to less than semiannual frequency.
In the carrying out of the Project, HPG shall employ competent and qualified consultants and contractors, acceptable to ADB, to an extent and upon terms and conditions satisfactory to ADB.	Section 2.03(a), Project Agreement	Complied with
Except as ADB may otherwise agree, all goods and services to be financed out of the proceeds of the Loan shall be procured in accordance with the provisions of Schedule 4 to the Loan Agreement. ADB may refuse to finance a contract where goods or services have not been procured under procedures substantially in accordance with those agreed between the Borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.	Section 2.03(b), Project Agreement	Complied with. All goods and services financed out of the loan proceeds were procured in accordance with the provisions of schedule 4 of the loan agreement.
HPG shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. HPG shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.	Section 2.04, Project Agreement	Complied with. The HPG, through the PPMO, submitted to ADB all necessary documents for 27 non-core subprojects and ensured that the subprojects were implemented following the submitted documents.

Covenant	Reference in Loan or Project Agreements	Status of Compliance
HPG shall, during Project construction, take out and maintain with responsible insurers, or make other arrangements satisfactory to ADB for, insurance of the Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice.	Section 2.05(a), Project Agreement	Complied with. The HPG took out and maintained insurance with responsible insurers during project construction.
Without limiting the generality of the foregoing, HPG undertakes to insure, or cause to be insured, the goods to be imported for the Project and to be financed out of the proceeds of the Loan against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a currency freely usable to replace or repair such goods.	Section 2.05(b), Project Agreement	Complied with. The HPG undertook to insure, or caused to be insured, the goods for the project.
HPG shall maintain, or cause to be maintained, records and accounts adequate to identify the goods and services financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, its operations and financial condition.	Section 2.06, Project Agreement	Complied with. The HPG maintained, or caused to be maintained, necessary records and accounts.
ADB and HPG shall cooperate fully to ensure that the purposes of the Loan will be accomplished.	Section 2.07(a), Project Agreement	Complied with. The purposes of the loan were accomplished.
HPG shall promptly inform ADB of any condition which interferes with, or threatens to interfere with, the progress of the Project, the performance of its obligations under this Project Agreement or the Onlending Agreements, or the accomplishment of the purposes of the Loan.	Section 2.07(b), Project Agreement	Complied with. The HPG informed ADB of any such information.
ADB and HPG shall from time to time, at the request of either party, exchange views through their representatives with regard to any matters to the Project and the Loan.	Section 2.07 (c), Project Agreement	Complied with
HPG shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Loan and the expenditure of the proceeds thereof; (ii) the goods and services and other items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of HPG and each Local Government to the extent relevant to the Project; and (v) any other matters relating to the purposes of the Loan.	Section 2.08(a), Project Agreement	Complied with
Without limiting the generality of the foregoing, HPG shall furnish to ADB quarterly reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made and problems encountered during the quarter under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following quarter.	Section 2.08(b), Project Agreement	Complied with. 24 project progress reports were submitted to ADB that covered the period from the project start to 31 October 2014. (The 1 November–31 December 2014 period was covered by the PPMO's PCR. Report No. 1 covered from the project start to 31 December 2006. Report No. 10 covered 6 months from April to September 2010. Report No. 11 covered 6 months from October 2010 to March 2011. All the other reports covered 3-month periods.

Covenant	Reference in Loan or Project Agreements	Status of Compliance
Promptly after physical completion of the Project, but in any event not later than three (3) months thereafter or such later date as ADB may agree for this purpose, HPG shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by HPG of its obligations under this Project Agreement and the accomplishment of the purposes of the Loan.	Section 2.08(c), Project Agreement	Complied with. A project completion report was submitted to ADB.
HPG shall (i) maintain separate accounts for the Project and for its overall operations; (ii) have such accounts and related financial statements (balance sheet, statement of income and expenses, and related statements) audited annually, in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB; and (iii) furnish to ADB, promptly after their preparation but in any event not later than six (6) months after the close of the fiscal year to which they relate, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the Loan proceeds and compliance with the covenants of the Loan Agreement as well as on the use of the procedures for imprest account/statement of expenditures), all in the English language. HPG shall furnish to ADB such further information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.	Section 2.09(a), Project Agreement	Complied with. Audit reports for 2007, 2008, 2009, 2010, 2011, 2012, 2013, January 2014–June 2015, and July 2015–February 2016 were submitted to ADB. In all audit reports, the auditor confirmed that the loan funds were appropriately used. Each report contained a section on audit findings and recommendations, which served as a management letter in PRC audit reports.
HPG shall cause each Local Government to enable ADB, upon ADB's request, to discuss its financial statements and its financial affairs from time to time with its auditors, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB, provided that any such discussion shall be conducted only in the presence of an authorized officer of the relevant Local Government unless HPG shall otherwise agree.	Section 2.09(b), Project Agreement	Not yet applicable
HPG shall cause each Local Government to enable ADB's representatives to inspect the Project, the goods financed out of the proceeds of the Loan, all other plants, sites, works, properties and equipment of such Local Government to the extent relevant to the Project, and any relevant records and documents.	Section 2.10, Project Agreement	Complied with. ADB reviewed many subprojects based on arrangements made by HPG.
HPG shall cause each Local Government to conduct at all times, its activities in accordance with sound administrative, financial, environmental and flood management practices, and under the supervision of competent and experienced management and personnel.	Section 2.11(a), Project Agreement	Complied with, except for partial compliance on matters related to the project leading group, counterpart funds for external resettlement M&E, and environmental monitoring and reporting
HPG shall cause each Local Government at all times to operate and maintain its plants, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all in accordance with sound administrative, financial, engineering, social, environmental, flood management, and maintenance and operational practices.	Section 2.11(b), Project Agreement	Complied with. All equipment and facilities purchased, installed, or constructed under the project are being appropriately operated and maintained by the local governments.
Except as ADB may otherwise agree, HPG shall not, and shall cause each Local Government not to sell, lease or otherwise dispose of any of its assets which may be required for the efficient carrying on of its	Section 2.12, Project Agreement	Complied with. None of the equipment and facilities purchased,

Covenant	Reference in Loan or Project Agreements	Status of Compliance
operations or the disposal of which may prejudice its ability to perform satisfactorily any of its obligations under this Project Agreement.		installed, or constructed under the project have been sold, leased, or disposed of; and all are being appropriately operated and maintained by the local governments.
Except as ADB may otherwise agree, HPG shall, and shall cause each Local Government to apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of the Loan Agreement and this Project Agreement, and shall ensure that all goods and services financed out of such proceeds are used exclusively in the carrying out of the Project.	Section 2.13, Project Agreement	Complied with. The loan proceeds were applied and used appropriately.
Except as ADB may otherwise agree, HPG shall cause each Local Government to duly perform all its obligations under the relevant Onlending Agreement, and not to take, or concur in, any action which would have the effect of assigning, amending, abrogating or waiving any rights or obligations of the parties under the relevant Onlending Agreement.	Section 2.14, Project Agreement	Complied with. Each local government duly performed all its obligations under the relevant onlending agreement.
HPG shall cause each Local Government to promptly notify ADB of any proposal to amend, suspend or repeal any provision of its charter and to afford ADB an adequate opportunity to comment on such proposal prior to taking any action thereon.	Section 2.15, Project Agreement	Complied with. Each local government, through the PPMO, notified ADB of such proposals.
Project Executing Agency		
HPG shall be the Project Executing Agency and as such shall be responsible for overall implementation of the Project.	Para. 1, Schedule, Project Agreement	Complied with
Project Implementing Agencies		
Each Local Government participating in the Project shall bear immediate responsibility for implementing its particular subproject/s.	Para. 2, Schedule, Project Agreement	Complied with
Project Leading Group		
The Project leading group established by HPG to oversee Project preparation shall continue to meet semi-annually to oversee Project implementation. The Project leading group shall be headed by the Vice Governor of Hunan Province.	Para. 3, Schedule, Project Agreement	Partially complied with. The project leading group did not meet semiannually.
Provincial Project Management Office		
The PPMO shall operate from the PWRD office in Changsha and shall have day-to-day responsibility for Project implementation and primary responsibility for coordinating and directing subproject implementation. The PPMO shall include representatives from the three main line agencies responsible for the Project –PDRC, PFD, and PWRD. Other agencies and institutes shall be represented as required. The PPMO shall also be responsible for directing Project preparatory activities, assisting the LPMOs to plan and manage their subproject works, setting up and managing finances, planning, managing and monitoring the resettlement and environmental management activities, and establishing project monitoring systems. The PPMO shall coordinate and manage reporting and communication with ADB.	Para. 4, Schedule, Project Agreement	Complied with
Local Project Management Offices		
Each participating Local Government shall set up a local project leading group and a LPMO to coordinate aspects of Project preparation and implementation in their respective jurisdictions.	Para. 5, Schedule, Project Agreement	Complied with
Subproject Selection		
To be eligible for financing under the Project, the FSR for each subproject shall include: (i) a flood risk and situation assessment, (ii) a technical analysis and description, (iii) subproject rationale, (iv) scope and components, (v) cost estimates and financing plan, (vi)	Para 6, Schedule, Project Agreement	Complied with. FSRs for 8 core subprojects were approved by ADB

Covenant	Reference in Loan or Project Agreements	Status of Compliance
implementation arrangements, (vii) financial and economic analysis, and (viii) a social and poverty impact assessment. Based on the relevant FSR, HPG through the PPMO shall select each subproject according to the following criteria: (omitted)		during the PPTA implementation. All 27 FSRs for non-core subprojects were also approved by ADB during project implementation.
Subproject Evaluation and Approval		
HPG through the PPMO shall arrange for the preparation of the FSRs for the 27 non-core subproject through a qualified design institute in line with the standards set in the 8 core subproject FSRs, hold required public consultations, revise, and obtain approval of the relevant Local Government prior to submission to PDRC for appraisal and approval.	Para 7, Schedule, Project Agreement	Complied with. The FSRs for all 27 non-core subprojects were prepared in accordance with these requirements.
PDRC in consultation with PWRD, PFD, the Hunan Environment Protection Bureau and relevant line agencies shall review and appraise the 27 non-core subprojects and ensure that the subproject selection criteria agreed with ADB are followed.	Para 8, Schedule, Project Agreement	Complied with. PDRC confirmed that the subproject selection criteria were followed for the selection of all the 27 non-core subprojects.
HPG through the PPMO shall ensure all PRC domestic requirements arising from each FSR are met in a timely way, including PRC required approvals for land acquisition, environmental assessment, and technical assessments.	Para 9, Schedule, Project Agreement	Complied with. All domestic requirements were met.
HPG shall submit all non-core subproject FSRs to ADB for review in accordance with subproject selection criteria, and for approval on a no-objection basis. Non-core subproject FSRs shall be submitted in line with proposed annual work plans and six weeks in advance of contract bidding. ADB's final approval of the financing of each sub-project shall be subject to post-facto review and confirmation that implementation is in accordance with the sector plan, subproject selection criteria and all relevant ADB policies. The approved RF, EMDF and EAMF shall provide the basis for preparing non-core subproject RPs, EMDPs, and IEEs. HPG shall submit to ADB for approval prior to commencement of land acquisition all RPs and EMDPs. HPG shall submit all subproject IEEs to ADB for review at least six weeks in advance of contract award for approval by ADB on a no-objection basis.	Para 10, Schedule, Project Agreement	Partially complied with. All necessary FSRs, IEEs, and RPs were approved by ADB, but resettlement for 5 subprojects began before ADB approval of the RPs, so due diligence was conducted.
Social Safeguards		
HPG through the PPMO and the LPMOs shall ensure that (a) the RF and all RPs are implemented in accordance with their terms, (b) all land and rights-of-way required by the Project are made available in a timely manner, (c) provisions of the RPs, including compensation and entitlements for APs, are implemented in accordance with all applicable government laws and regulations and ADB's <i>Policy on Involuntary Resettlement</i> (1995), (d) compensation and resettlement assistance are given to the APs prior to dispossession and displacement, (e) counterpart funds for land acquisition and resettlement activities are provided in a timely manner, (f) any obligations in excess of the RP budget estimates are met, and (g) the APs will be at least as well off as they would have been in the absence of the Project.	Para 11, Schedule, Project Agreement	Complied with. There were no serious problems for RP implementation. Monitoring confirmed that most APs are better off.
HPG through the PPMO shall ensure that the RPs prepared for the core subprojects in the event of significant changes arising from detailed designs are updated, disclosed to the APs and resubmitted to ADB for concurrence.	Para 12, Schedule, Project Agreement	Complied with. 6 core subproject RPs were updated reflecting increased compensation rates. APs were informed of the new rates via local

Covenant	Reference in Loan or Project Agreements	Status of Compliance
<p>HPG through the PPMO shall (a) ensure that RPs prepared for the non-core subprojects are based on the RF and detailed design, and are submitted to ADB for approval; and (b) advise ADB and reflect any significant material changes in Project scope in an updated RP and submit to ADB for approval. With respect to any updated RPs, HPG shall disclose such updated RPs to APs prior to ADB approval.</p>	<p>Para 13, Schedule, Project Agreement</p>	<p>notices. Complied with. (a) For 27 non-core subprojects, RPs prepared based on the RF, and detailed designs were approved by ADB (b) 6 core subproject RPs updated to reflect increased compensation rates were disclosed to affected persons and approved by ADB.</p>
<p>HPG through the PPMO and the LPMOs shall ensure that (a) adequate staff and resources are committed to supervising and monitoring the implementation of the RPs and providing quarterly reports on such implementation to ADB, (b) an independent agency acceptable to ADB is engaged by the PPMO to carry out monitoring and evaluation, and to forward reports to ADB semi-annually during resettlement implementation and annually for two years thereafter, and (c) summaries of annual audits of resettlement disbursements and expenditures under each RP are provided to ADB.</p>	<p>Para 14, Schedule, Project Agreement</p>	<p>Partially complied with. Two external monitors were engaged, but did not submit reports semiannually. One submitted 10 M&E reports during 2007–2015, and the other submitted 7 reports during 2008–2015.</p>
<p>HPG through the PPMO shall (i) ensure that civil works contractor specifications include requirements to comply with the RPs and entitlements for permanent and temporary impacts to APs, and (ii) supervise contractors to ensure compliance with requirements of the RPs, applicable laws and regulations, and ADB's <i>Policy on Involuntary Resettlement</i>.</p>	<p>Para 15, Schedule, Project Agreement</p>	<p>Complied with</p>
<p>HPG through the PPMO and the LPMOs shall ensure that (a) the EMDF and EMDPs are implemented in accordance with their terms; (b) EMDPs are prepared for relevant subprojects in accordance with the EMDF and ADB's <i>Policy on Indigenous Peoples (1998)</i>; (c) EMDPs are disclosed to APs, and reviewed and endorsed by the LPMOs; (d) ethnic minorities in the Project areas are consulted and provided with an opportunity to participate in the implementation of the EMDPs; (e) sufficient budget for implementation and monitoring of each EMDP is made available in a timely manner, and any obligations in excess of the EMDP budget estimates are met; (f) any significant changes to any EMDP are submitted to ADB for approval; (g) an independent agency acceptable to ADB is engaged by the PPMO to carry out regular monitoring and evaluation of the implementation of the EMDPs and to report annually to ADB; and (h) the targeted ethnic minorities will benefit from the Project and will be at least as well off as they would have been in the absence of the Project.</p>	<p>Para 16, Schedule, Project Agreement</p>	<p>Complied with. EMDPs for 8 non-core subprojects were approved by ADB and implemented, fulfilling requirements. An independent agency was engaged, and it submitted 7 annual external M&E reports to ADB during 2008–2014.</p>
Environment Management		
<p>HPG through the PPMO shall ensure that with regard to all non-core subprojects: (a) subproject IEEs are prepared; (b) each IEE meets the requirements of relevant PRC laws and regulations, ADB's <i>Environment Policy (2002)</i>, the EAMF, and the model IEEs developed for the core subprojects; (c) each IEE indicates that the concerned subproject will not result in significant long term negative environmental impacts; and (d) each IEE includes a costed subproject EMP and defined mitigation measures in line with the Borrower's laws and ADB's <i>Environment Policy</i> that will be implemented to mitigate environmental impacts during construction and operation.</p>	<p>Para 17, Schedule, Project Agreement</p>	<p>Complied with. All 27 non-core subproject IEEs were approved by ADB.</p>

Covenant	Reference in Loan or Project Agreements	Status of Compliance
HPG through the PPMO shall ensure that (a) mitigation measures follow PRC laws and regulations; (b) requirements for mitigation implementation are incorporated into all subproject construction contracts; and (c) subproject design minimizes detrimental environmental impact as a result of cumulative downstream flood effects from improved structural works.	Para 18, Schedule, Project Agreement	Complied with
HPG through the PPMO shall ensure that construction works do not take place in any areas of special environmental significance, including wetlands, areas of habitat for rare and endangered flora and fauna, and protected areas or nature reserves.	Para 19, Schedule, Project Agreement	Complied with
HPG through the PPMO shall ensure that (a) environmental management practices of the contractors are supervised and monitored during construction as described in the EAMF and the CEMP for the Project; (b) air, water and noise monitoring is undertaken as described in the ambient monitoring program in the EAMF and the CEMP; (c) performance of the contractors in regard to environmental protection is reported in the Project progress reports; and (d) environmental performance of each subproject and the entire Project is evaluated and reported as part of the Project performance monitoring and evaluation reports.	Para 20, Schedule, Project Agreement	Partially complied with. Performance by the contractors and the environmental performances of the individual subprojects and the project overall were not very well reported in the progress reports.
Financial Management		
HPG shall ensure that PFD establishes and is responsible for an imprest account for the Project. The imprest account and other permissible methods shall be operated and maintained in accordance with ADB's <i>Loan Disbursement Handbook (January 2001)</i> .	Para 21, Schedule, Project Agreement	Complied with. The imprest account was established and appropriately operated and maintained.
HPG shall ensure that the PPMO and PFD prepare and distribute before Project start-up a model project financial management manual detailing guidelines on internal controls, accounting procedures, withdrawal application procedures, and job descriptions for financial staff.	Para 22, Schedule, Project Agreement	Complied with. The financial management manual was finalized in June 2007 and distributed.
HPG shall ensure that adequate numbers of qualified and trained project accounting staff are placed at all levels where accounting and financial management work will be performed. The PPMO and PFD shall provide training on ADB's procedures and requirements on disbursement, procurement and financial management before commencing project implementation.	Para 23, Schedule, Project Agreement	Complied with. Two workshops were held in February 2007 and January 2008 to train project staff on ADB procedures and project and financial management.
HPG shall ensure that the PPMO in conjunction with PFD monitors LPMO subproject accounts, payments and replenishment requirements, and shall coordinate loan funds disbursement and replenishment of the imprest account.	Para 24, Schedule, Project Agreement	Complied with
HPG shall ensure that the LPMOs establish suitable financial management systems for their subprojects, issue requests to the PPMO for approval of expenditures, and provide the PPMO with quarterly progress reports.	Para 25, Schedule, Project Agreement	Complied with
HPG shall ensure that the PPMO manages procurement activities, including preparing bidding documents, prequalification and tender evaluations.	Para 26, Schedule, Project Agreement	Complied with. The model NCB document for civil works was approved by ADB in September 2006 and revised with ADB's approval in July 2007. The model NCB document for goods was approved by ADB on 23 January 2009. All procurement used

Covenant	Reference in Loan or Project Agreements	Status of Compliance
		these model NCB documents and was conducted in accordance with ADB's requirements
Counterpart Funding		
HPG shall ensure that the Local Governments apply for and provide adequate counterpart funds in a timely manner, and prepare and monitor annual plans and budgets needed for Project implementation.	Para 27, Schedule, Project Agreement	Partially complied with. The LPMOs did not pay the two agencies which conducted external resettlement M&E in a timely manner. This reduced the resettlement M&E reports to less than semiannual frequency.
HPG shall ensure that, prior to completion of subprojects, the Local Governments conduct budget needs assessments for operation and maintenance and debt servicing.	Para 28, Schedule, Project Agreement	Complied with
Project Performance Monitoring and Evaluation		
HPG shall ensure that the PPMO (a) establishes a project management and monitoring system, and (b) follows monitoring procedures for each subproject. The Project Monitoring shall be based on annual plans, and monitoring and reporting systems, including EMPs, and resettlement and ethnic minorities frameworks. The emphasis on the monitoring of implementation shall extend to the monitoring and mitigation of the risks identified in the PDMF. The monitoring system shall be based on: the agreed PDMF; baseline information, depending on relevance and availability based on (a) existing data, or (b) the first measurement at the starting point; or a rolling baseline for subprojects where data is collected at subproject startup.	Para 29(a) Schedule, Project Agreement	Complied with. The PPMO conducted project M&E and submitted quarterly and project completion reports to ADB.
The initial PPR shall be prepared from the PDMF within one month of the Effective Date and updated periodically during Project review missions in consultation with HPG or after receipt of Project progress reports. A Project completion report shall be prepared within three months of completion of the Project.	Para 29(b), Schedule, Project Agreement	Complied with. The PPMO submitted to ADB a project completion report. including a project performance evaluation.
Project Review		
Semi-annual reviews of the Project shall be undertaken by the PPMO and shall include reviews of: (i) the consolidated work plan for the year, (ii) key steps to be taken to ensure timely implementation, (iii) proposed loan and counterpart funds needs, and (iv) compliance with safeguard measures.	Para 30(a), Schedule, Project Agreement	Complied with
A mid-term review of the Project shall be undertaken by the Borrower and HPG in conjunction with ADB three years after Project implementation begins. The review will include a detailed evaluation of scope, implementation arrangements, environmental management, resettlement, achievement of scheduled targets, and progress with capacity building measures.	Para. 30 (b), Schedule, Project Agreement	Complied with. A midterm review mission was conducted 1–25 September 2009.
Anti-corruption		
During Project implementation, HPG shall follow ADB's Anticorruption Policy, it being understood that ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project. HPG shall cause the PPMO to ensure that (a) periodic inspections on the contractor's	Para 31, Schedule, Project Agreement	Complied with

Covenant	Reference in Loan or Project Agreements	Status of Compliance
activities related to fund withdrawals and settlements are carried out; (b) relevant provisions of ADB's Anticorruption Policy are included in all bidding documents for the Project; and (c) all contract financed by ADB in connection with the Project include provisions specifying the right of ADB to audit and examine the records and accounts of the PPMO and all contractors, suppliers, consultants and other service providers as they relate to the Project.		

ADB = Asian Development Bank, AP = affected person, CEMP = consolidated environment management plan, EAMF = environmental assessment and management framework, EMDF = ethnic minority development framework, EMDP = ethnic minority development plan, EMP = environmental management plan, FSR = feasibility study report, HPG = Hunan provincial government, IEE = initial environmental examination, LPMO = local project management office, M&E = monitoring and evaluation, NCB = national competitive bidding, No. = number, PDMF = project design and monitoring framework, PDRC = Hunan Provincial Development and Reform Commission, PFD = Hunan Provincial Finance Department, PPMO = provincial project management office, PPR = project performance report, PPTA = project preparatory technical assistance, PRC = People's Republic of China, PWRD = Hunan Provincial Water Resources Department, RF = resettlement framework, RP = resettlement plan.

Source: Asian Development Bank.

TECHNICAL ASSISTANCE COMPLETION REPORT

TA Number, Country, and Name: TA 4813-PRC: Strengthening Flood Management Sustainability in Hunan Province			Amount Approved: \$500,000 Revised Amount: \$560,000	
Executing Agency: Hunan Provincial Government	Source of Funding: Spanish Cooperation Fund for Technical Assistance ¹ (\$500,000); and Netherlands Trust Fund under the Water Financing Partnership Facility ² (\$60,000)		Amount Undisbursed: \$51,912.93	Amount Utilized: \$508,087.07
TA Approval Date: 29 June 2006	TA Signing Date: 22 August 2006	Fielding of First Consultant: 1 November 2006	TA Completion Date Original: 30 September 2012 Actual: 30 September 2013 Account Closing Date Original: 30 September 2012 Actual: 9 October 2013	
<p>Description</p> <p>Many cities and industrial center in the People's Republic of China (PRC) are adjacent to major rivers, resulting in a high proportion of their economic activities being at risk from periodic floods. Major floods and poor drainage are the most frequent and severe natural hazards in the PRC. Floods are also a recurrent natural hazard in Hunan Province. They are localized in the four main rivers and their tributaries which drain a total area of 179,000 square kilometers (84% of the provincial area) and are home to 56.4 million people (84% of the provincial population). Since 2000, the PRC government has been changing its policy and strategy from a flood-control approach to an integrated flood management approach. To support the PRC government's policy and Hunan provincial government's (HPG's) integrated flood-control program under the Hunan Provincial 11th Five-Year Plan (2006–2010), Asian Development Bank (ADB) is providing the HPG with the Hunan Flood Management Sector Project (HFMSMSP).³</p> <p>An advisory technical assistance (TA) associated with the HFMSMSP was provided to support sustainable flood management by assisting the HPG, particularly Hunan Provincial Water Resources Department (PWRD), to plan and assess nonstructural aspects of flood management and strengthen capacity in plan implementation.</p> <p>Expected Impact, Outcome, and Outputs</p> <p>The expected outcome of the TA was to strengthen the capacity of the PWRD's strategic and annual planning and management systems to support integrated and sustainable flood management. The expected key outputs of the TA included: (i) a review and analysis of the Hunan's existing flood warning system to optimize hydrometeorological data collection and flood preparedness; (ii) a feasibility assessment of providing flood insurance to rural and urban people in Hunan; and (iii) further development and capacity building for the HFMSMSP.</p> <p>Delivery of Inputs and Conduct of Activities</p> <p>The TA was carried out by a team of consultants engaged through a firm and an individual consultant. During TA implementation, the following minor changes in scope were made: (i) improving coordination between the provincial project management office (PPMO), local project management offices (LPMOs), and other agencies for the HFMSMSP, particularly for resettlement, by increasing inputs of the team leader and international resettlement specialist of the consultant team, and engaging an additional national social safeguard implementation coordinator on individual basis; and (ii) writing up findings of the second component of the TA (a feasibility assessment of providing flood insurance to rural and urban people in Hunan) for publication, by increasing input of the international flood insurance specialist of the consultant team. To support these new activities, the TA amount was increased by US\$60,000, financed by the Netherlands Trust Fund for the Water Financing Partnership Facility. Accordingly, the TA completion date was extended from 30 September 2012 to 30 September 2013.</p> <p>Originally, the TA was designed to provide 49.0 person-months (pm) of consulting services (15.0 pm of international and 34.0 pm of national consultants). At implementation, 50.6 pm of consulting services were provided by the team of consultants (16.6 pm of international and 34.0 pm of national consultants), and 4.0 pm was provided by the national social safeguard implementation coordinator additionally engaged on individual basis.</p> <p>The team of consultants produced the required outputs and their performance was considered satisfactory. With regard to the national social safeguard implementation coordinator additionally engaged on individual basis, the original input to be provided was 6.5 pm, but the contract was terminated after provision of 4.0 pm of consulting services due to serious injury in a traffic accident.</p>				

¹ Administered by the Asian Development Bank.

² Administered by the Asian Development Bank.

³ ADB. 2006. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance to the People's Republic of China for the Hunan Flood Management Sector Project*. Manila.

As the executing agency, the HPG set up an interagency project leading group and the PPMO for both the HFMS and the TA. The PPMO ensured interdepartmental coordination and the consultants' access to necessary reports and data. The HPG's performance was satisfactory. ADB provided guidance and fielded timely missions for the TA inception, midterm, and final reviews. The performance of ADB was satisfactory.

Evaluation of Outputs and Achievement of Outcome

The team of consultants delivered all the outputs required by the original and revised scope. The final report covered (i) proposals for flood warning and management system and flood emergency management; (ii) findings of the flood insurance feasibility study conducted in a pilot city; (iii) a review of the annual planning and management systems to support integrated and sustainable flood management, and (iv) the activities conducted for capacity building to support the implementation of the HFMS.

Although the contract with the national social safeguard implementation coordinator was terminated after the provision of 4.0 pm out of the originally planned 6.5 pm, the coordinator conducted several field visits; reviewed resettlement implementation under the HFMS in detail; successfully improved coordination between the PPMO, LPMOs, and other agencies for resettlement for the HFMS; and submitted three detailed reports to ADB.

Based on the proposals made by the team of consultants, the HPG and implementing agencies improved their flood warning and management system under the HFMS. The speed and accuracy of flood forecasting was significantly improved. Findings of the flood insurance feasibility study were written up for publication.⁴ The team of consultants and the additionally engaged national social safeguard implementation coordinator help the PWRD implement the HFMS by strengthening its capacity for integrated and sustainable flood management and improving coordination between the PPMO, LPMOs, and other relevant agencies. The outcome of the TA was achieved.

Overall Assessment and Rating

The TA is rated *successful*. The team of consultants performed satisfactorily and effectively completed all the planned activities. The national social safeguard implementation coordinator conducted a detailed review of resettlement implementation under the HFMS and improved coordination between relevant agencies for resettlement. The HPG actively participated in TA activities and was satisfied with the TA findings. The HPG adopted the TA project's recommendations and considered them useful to its implementation of integrated and sustainable flood management. The findings of the flood insurance feasibility study were disseminated through an ADB publication (Footnote 3).

Major Lessons

Except for inundation of flood detention areas, flood insurance can cover damages from any type of inland flooding, whether indemnity based or parametric. The following conditions need to be met to ensure the feasibility of a flood insurance scheme: (i) flood insurance is most feasible if supported by detailed mapping of the flood risk and reliable data on building floor level elevations relative to flood risk levels; (ii) normal indemnity flood insurance is likely to be more feasible for property in lower risk areas, while, for property in higher risk areas, normal indemnity flood insurance might need to be accompanied by significant co-insurance by the property owner and government subsidies of the premiums in order to be feasible; and (iii) parametric insurance is more suited for flood than other hazards, but the government may still consider the necessity of providing additional premium contributions for property in higher risk areas to ensure a reasonable level of cover.

To derive maximum benefits from a flood warning and management system that has distributed responsibilities across levels of government, physical, technical, and financial coordination and cooperation are required between agencies involved in the system.

Recommendations and Follow-Up Actions

It is recommended that the following be reviewed and followed up under the ongoing HFMS: (i) technical training for flood forecasting and management be provided to relevant provincial and local government staff, and community awareness of the new flood warning and risk conditions be developed; (ii) the findings of the flood insurance feasibility study be used by flood plain managers and insurance companies to guide the integration of flood insurance with other nonstructural measures; and (iii) management system for the HFMS be monitored and adjusted to achieve completion of the HFMS on time and budget.

Prepared by: Yoshiaki Kobayashi

Designation and Division: Senior Water Resources Specialist, EAER

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

⁴ G. Walker, T. Lin, and Y. Kobayashi. 2009. Is Flood Insurance Feasible?: Experience from the People's Republic of China. *ADB Sustainable Development Working Paper Series*. No. 5. Manila: Asian Development Bank.

PROCUREMENT PACKAGES FOR ADB FINANCING

Packages	At Appraisal		Actual		
	Estimated No. of Packages	Procurement Mode	No. of Packages	Amount ^a (\$ million)	Procurement Mode
A. Nonstructural Flood Management System					
1. Core subprojects					
(i) Data acquisition system	Multiple packages	ICB	1	0.4	NCB
2. Noncore subprojects					
(i) Data acquisition system	Multiple packages	ICB	3	1.0	NCB
Subtotal	Multiple packages		4	1.3	
B. Structural Flood Protection, Resettlement, and Environmental Management					
1. Core subprojects					
(i) Civil works	20	NCB	18	75.3	NCB
(ii) Pumping stations, sluice gates	2	ICB	0	0.0	-
2. Noncore subprojects					
(i) Civil works	Multiple packages	ICB/NCB	52	247.7	NCB/DC
(ii) Pumping stations, sluice gates	Multiple packages	ICB/NCB	5	2.8	NCB
Subtotal	Multiple packages		75	325.7	
C. Project Management					
(i) Vehicles	Multiple packages	NCB	6	2.2	NCB
(ii) Office equipment	Multiple packages	NCB/S	3	0.5	NCB
Subtotal	Multiple packages		9	2.8	
D. Capacity Biding					
(i) International training and study tours	Multiple packages	CQS		No procurements	
(ii) Domestic training and study tours	Multiple packages	CQS		No procurements	
Subtotal	Multiple packages				
Total	Multiple packages		88	329.9	

CQS = consultants' qualifications selection, DC = direct contract, ICB = international competitive bidding, NCB = national competitive bidding, No. = number, S = shopping.

^a Amount of original contract prices before revisions.

Sources: Asian Development Bank (ADB); ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to the People's Republic of China for Hunan Flood Management Sector Project*. Manila.

ECONOMIC AND FINANCIAL REEVALUATION

A. Economic Reevaluation

1. Methodology and Assumptions

1. An economic reevaluation was conducted at the completion of the Hunan Flood Management Sector Project of the 35 subprojects and the project overall. It compared the with- and without-project situations and used the same methodologies and major assumptions as the economic analysis undertaken at appraisal. Both evaluations followed the Asian Development Bank (ADB) *Guidelines for the Economic Analysis of Projects*.¹

2. Benefits and costs were first estimated in financial values and then converted to economic values. The economic benefits of the subprojects were considered to be the increase in flood protection provided by the flood protection structures constructed under the subprojects, which was assessed as equivalent to the annualized economic values of damages avoided by the structures. The flood protection structures increased flood protection levels from a flood return period of 1 in 5 years to one of 1 in 20 years in 26 county-level cities and counties. In the nine prefecture-level cities, the increase was from 1 in 5–10 years to 1 in 50–100-years. The economic life span of the flood protection structures was put at 40 years from completion. The economic benefits of the subprojects at appraisal were revalued on the basis of the 2015 constant price. To quantify the economic benefits at project completion, updated economic performance data was used. Historical (20-year) flood frequency data and asset loss rates provided by the subproject cities and counties were combined with current and projected economic activities in the subproject areas to estimate economic benefits under the situations with and without the project. An annual increase of 3% was included in the estimates of future assets (except for agriculture) to be protected by the flood protection structures to reflect expected development in the subproject areas. This is a conservative estimate, since the real annual increase in the value of assets during 2005–2015 was more than 3%, and economic output was projected to grow at more than 6% per year during the following 5 years.

3. Direct and quantifiable economic benefits of the subprojects were assessed. Indirect benefits such as the avoidance of injuries, hospitalizations, and deaths were omitted. So were unquantified benefits such as an improved environment. The economic benefits of the nonphysical improvements to the flood management system—e.g., the reduced need for large-scale evacuations and the mobilization of flood-fighting crews—were not quantified.

4. The economic costs of the subprojects consist of capital and operation and maintenance (O&M) costs. The financial capital costs include (i) the costs of construction or improvement of new or existing flood protection structures (civil works, equipment, and vehicles); (ii) the costs of land acquisition and resettlement; and (iii) the costs of such other project elements as surveys, designs, supervision, environmental management, and subproject management. The cost of provincial-level subproject management was included in the total project cost (0.55% of the total project cost). The financial capital costs used for the reevaluation were actual expenditures and expressed in the prices of the year when they were actually incurred. Costs and benefits after project completion were expressed in constant 2015 prices excluding inflation. Benefits before 2015 were estimated by depreciating the 2015 equivalent using inflation rates for the People's Republic of China (PRC) published by ADB.² Based on the actual financial O&M costs during

¹ ADB. 1997. *Guidelines for Economic Analysis of Projects*. Manila.

² 2.6% for 2009, 3.3% for 2010, 5.4% for 2011, 2.6% for 2012 and 2013, and 2.0% for 2014 and 2015.

the initial operation period, the economic cost of O&M was valued at about 3% of the total of the economic costs of civil works, equipment, and vehicles. This was the average for the 35 subprojects. For the purpose of the economic reevaluation, all costs that were incurred prior to the project's implementation in 2007 were treated as sunk costs and excluded.

5. Other basic assumptions used for the economic reevaluation are the following:

- (i) A domestic price numeraire was used.
- (ii) The PRC yuan (CNY) was the unit of account. The CNY6.5 = \$1 exchange rate prevailing at project completion was used.
- (iii) For non-traded goods, a standard exchange rate factor of 1.09 and a shadow wage rate factor for unskilled labor of 0.90 were used.
- (iv) Transfer payments such as taxes, duties, and subsidies were excluded from the valuation of economic benefits.
- (v) A standard conversion factor of 0.926 was used.
- (vi) The economic opportunity cost of capital of 12% per annum was used.

2. Reevaluated Economic Internal Rates of Return at Project Completion

6. Economic internal rates of returns (EIRRs) were computed to reexamine the economic viability of the subprojects and the overall project at completion. Table A9.1 shows the EIRRs for all the subprojects and overall project at completion compared with those at appraisal.

7. The EIRRs of the individual subprojects at completion range from 12.3% to 26.1%. The EIRR for the overall project is 16.4%. These EIRRs show the project investments in the flood protection structures to be economically viable at project completion. The EIRRs of 26 subprojects were the same or better than those calculated at appraisal. They were lower for the other 9 subprojects. The gaps between the appraisal and completion EIRRs was due principally to (i) changes in capital costs (due to such factors as the actual offers in competitive contract bidding), as well as changes in material and labor costs, subproject designs, and compensation rates for land acquisition and resettlement; (ii) changes in economic benefit estimates resulting from design revisions; and (iii) the extension of the construction periods for most subprojects from 2–5 years to 3–8 years.

8. These reevaluated EIRRs represent a conservative estimates of the degree of economic viability of the subprojects and the overall project, given the significant additional indirect and unquantifiable benefits that are not included in the estimate (para. 3).

9. The sensitivity analysis tested the robustness of the reevaluated EIRRs of the subprojects and overall project using three scenarios: (i) a 10% benefit decline, (ii) a 10% O&M cost increase, and (iii) a combination of both. Table A9.1 shows that the overall project and 28 of the 35 subprojects would remain economically viable under these scenarios. The 10% benefit decline would have a considerable impact on the EIRR for most subprojects, while a 10% O&M cost increase would have a minimal impact. With the 10% O&M cost increase, no subproject would register an EIRR lower than 12%, and thus all would remain economically viable. On the other hand, the 10% benefit decline would make the EIRRs slightly lower than 12% for seven subprojects, and these same seven subprojects would register EIRRs below 12% under the third scenario combining a 10% benefit decline and a 10% O&M cost increase. However, the analysis considered all 35 subprojects of the subprojects to be economically viable at completion, based on its calculation that the EIRRs of these seven subprojects would have

proven to be robust under all three scenarios if the substantial indirect and unquantified economic benefits omitted in the conservative EIRR calculations (para. 8) had been included.

Table A9.1: Sensitivity Analysis of Economic Internal Rates of Return at Appraisal and Project Completion

No.	Subproject	Base Case EIRR (%)		Scenario EIRR (%)		
		At Appraisal	At Project Completion	O&M Costs Rise 10%	Benefits Decline 10%	O&M Costs Rise 10% & Benefits Decline 10%
Core Subproject						
1	Xinhua County	13.7	19.0	18.9	17.2	17.1
2	Chenxi County	14.0	12.4	12.2	11.2	11.0
3	Sangzhi County	14.2	20.0	19.8	18.2	18.1
4	Loudi City	13.7	16.9	16.8	15.4	15.3
5	Leiyang City	12.8	12.4	12.2	11.2	11.0
6	Wugang City	13.6	12.8	12.7	11.6	11.4
7	Huaihua City	12.7	12.8	12.7	11.7	11.6
8	Yongzhou City	12.3	15.1	15.1	13.9	13.8
Non-Core Subproject						
9	Chenzhou City	17.7	22.8	22.7	20.8	20.7
10	Jishou City	14.6	13.3	13.2	12.1	12.0
11	Youxian County	12.9	16.6	16.5	15.2	15.1
12	Cili County	14.6	14.3	14.2	13.0	12.9
13	Shimen County	15.2	19.5	19.4	17.8	17.7
14	Lengshuijiang City	12.5	12.3	12.2	11.2	11.0
15	Shaoyang City	13.7	19.9	19.7	18.1	18.0
16	Longhui County	14.2	16.4	16.3	15.0	14.9
17	Jiangyong County	16.5	16.6	16.4	15.0	14.8
18	Xupu County	17.6	14.9	14.7	13.6	13.4
19	Shuangfeng County	15.1	12.4	12.2	11.2	11.1
20	Qiyang County	14.5	15.0	14.9	13.7	13.6
21	Jianghua County	13.4	19.4	19.3	17.8	17.7
22	Hengyang City	13.4	17.0	16.9	15.6	15.6
23	Hengyang County	15.3	16.0	15.9	14.6	14.5
24	Xintian County	13.7	19.3	19.2	17.8	17.6
25	Ningyuan County	14.5	12.6	12.5	11.5	11.3
26	Zhongfang County	15.6	18.2	18.1	16.6	16.5
27	Zhuzhou City	13.8	15.6	15.5	14.2	14.2
28	Xiangtan City	18.6	17.4	17.3	16.0	15.9
29	Zhuzhou County	14.8	16.0	15.9	14.6	14.4
30	Lianyuan City	16.2	26.1	26.0	24.0	23.9
31	Liling City	14.1	17.6	17.5	16.1	16.0
32	Shadong County	15.1	15.3	15.2	14.0	13.8
33	Fenghuang County	13.5	15.3	15.2	13.9	13.7
34	Baojing County	13.3	20.7	20.6	19.1	18.9
35	Luxi County	17.8	13.8	13.7	12.6	12.4
Overall Project^a			16.4	16.3	15.0	14.9

EIRR = economic internal rate of return, No. = number, O&M = operation and maintenance.

^a The EIRR for the overall project was not calculated at appraisal, since economic analyses were conducted only for the eight core subprojects during project preparation. The analyses for the 27 non-core subprojects were carried out during implementation from April 2007 to May 2008.

Sources: Feasibility study reports of 35 subprojects, Asian Development Bank.

C. Financial Reevaluation

1. Methodology

10. Since the local governments operating the flood protection structures do not generate revenues directly from the flood protection and are not financially independent entities, financial

sustainability was assessed through the investigation of whether they would have the financial resources available to them and/or be able to raise revenue needed to make project loan repayments and cover the costs of O&M for flood protection structures over the economic life of these project-financed assets.

11. Two main financing sources for the construction and O&M of the flood protection structures and loan repayments by local governments are (i) a flood control security fund financed by taxes,³ and (ii) an urban maintenance and construction tax.⁴

12. The fiscal affordability of the 35 subproject city and county governments to service the loan for the repayment period and fund adequate O&M was reassessed at project completion by comparing annual collections from the identified sources with financing required. Annual O&M costs were estimated based on actual expenditures incurred during the initial operation period. Interest and principal repayments of the ADB loan were estimated based on the outstanding amount of the subloan to each of the 35 city and county governments at the end of 2015, the remaining repayment period of 16 years from 2016 to 2032, and the ADB loan interest rate of 1.507% per annum prevailing in May 2016.

2. Fiscal Affordability Analysis

13. Table A9.2 shows the results of the fiscal affordability analysis. They show that fiscal affordability for funding O&M and making the loan repayments for the 35 subprojects ranges from 109% to 217%. This indicates that all the governments will have sufficient resources available to repay the ADB loan and pay O&M costs during the operation period. The overall sustainability of the loan repayments and proper O&M of the flood protection structures can therefore be expected, provided that the projected economic outputs in the subproject areas and the aforementioned tax revenues are maintained. At time of project completion, all repayments for the ADB loan have been made in full and on time.

14. The fiscal affordability analysis conservatively excludes other possible financing sources. This additional potential funding was not quantifiable at project completion but could be made available if required. The flood protection structures constructed or improved under the subprojects play an important role in protecting the lives and property of residents, economic growth, and investments in the subproject areas. This growth and greater investment will expand the tax base for the flood control security fund and the urban maintenance and construction tax collections, providing the city and county governments with additional revenues to support the O&M and ADB loan repayments.

Table A9.2: Fiscal Affordability Analysis (CNY million)

No.	Local Government	Identified Annual Funds Available (CNY million) A	Annual Funds Required (CNY million)			Affordability A / D (%)
			Loan Repayments B	O&M Funding C	Total Required D = B + C	
1	Xinhua County	5.5	1.5	2.6	4.2	133
2	Chenxi County	4.3	1.7	1.7	3.4	127

³ According to provisions issued by the HPG on 31 August 1994, businesses must pay 0.08%-0.20% of their sales or revenues to a flood control security fund. Insurance companies must pay 1% of annual property insurance premiums to the flood control security fund. Of the funds collected, 10% are allocated to the province and 90% to the Hunan's cities and counties.

⁴ The tax is levied on all enterprises and individuals paying value-added taxes, business taxes, and consumption taxes at rates of 7% of the value-added tax, 5% of the business tax, and 1% of the consumption tax. In most of the project cities and counties, 15% of the urban maintenance and construction tax is earmarked for flood protection.

No.	Local Government	Identified Annual Funds Available (CNY million) A	Annual Funds Required (CNY million)			Affordability A / D (%)
			Loan Repayments B	O&M Funding C	Total Required D = B + C	
3	Sangzhi County	3.1	1.3	1.5	2.7	114
4	Loudi City	9.2	2.3	4.2	6.5	141
5	Leiyang City	1.6	0.6	0.6	1.2	135
6	Wugang City	3.8	1.5	1.8	3.3	114
7	Huaihua City	9.5	3.5	3.7	7.1	134
8	Yongzhou City	9.8	3.7	3.9	7.6	129
9	Chenzhou City	6.6	2.0	2.7	4.7	141
10	Jishou City	11.2	5.0	4.3	9.3	121
11	Youxian County	5.6	1.3	2.5	3.8	148
12	Cili County	4.2	2.0	1.5	3.5	121
13	Shimen County	4.8	1.8	1.9	3.7	131
14	Lengshuijiang City	6.5	2.3	2.0	4.3	151
15	Shaoyang City	6.2	1.4	1.4	2.9	217
16	Longhui County	6.0	1.5	1.6	3.1	193
17	Jiangyong County	2.4	0.6	0.9	1.5	162
18	Xupu County	3.4	1.1	1.4	2.5	137
19	Shuangfeng County	3.3	1.5	1.5	3.0	109
20	Qiyang County	4.8	0.9	2.3	3.2	150
21	Jianghua County	2.4	0.7	0.9	1.6	153
22	Hengyang City	25.6	9.9	5.8	15.7	163
23	Hengyang County	4.5	1.8	1.5	3.3	135
24	Xintian County	2.2	0.7	0.8	1.6	142
25	Ningyuan County	2.3	0.9	1.0	1.9	122
26	Zhongfang County	2.7	1.1	1.2	2.3	118
27	Zhuzhou City	20.5	7.3	4.0	11.3	182
28	Xiangtan City	6.5	2.0	2.0	4.0	162
29	Zhuzhou County	4.5	1.3	1.3	2.6	171
30	Lianyuan City	5.3	2.0	2.2	4.2	126
31	Liling City	6.3	2.1	2.2	4.3	148
32	Shaodong County	2.5	0.6	0.9	1.5	166
33	Fenghuang County	3.0	1.3	1.3	2.5	119
34	Baojing County	5.5	2.4	2.5	4.9	113
35	Luxi County	2.7	1.1	1.1	2.2	124

No. = number, O&M = operations and maintenance.

Note. The data for the identified annual funds available (A) and the O&M funding requirements (C) are from Hunan provincial project management office and subproject city and county governments. The loan repayments required (B) have been estimated based on the outstanding amount of Asian Development Bank loan for each of the 35 subprojects at the end of 2015, provided by the Hunan Provincial Finance Bureau.

Sources: Hunan provincial government and the 35 city or county governments.

D. Conclusion

15. Overall, the analysis found the project investment to be highly efficient. Although the project implementation period has been extended by 21 months, the economic reevaluation indicates that investments for all individual subprojects and the overall project remain economically viable. All reevaluated EIRRs are greater than the economic opportunity cost of capital of 12%.

16. The financial affordability analysis showed that the funds available to the 35 city and county governments will be sufficient to cover the O&M costs and ADB loan repayments, provided that the projected economic outputs and tax revenues are maintained.

ENVIRONMENTAL MANAGEMENT

A. Environment Categorization and Due Diligence

1. The Hunan Flood Management Sector Project was classified as an environmental safeguards category B project by the Asian Development Bank (ADB). In line with this classification, ADB took several steps during project preparation. It prepared an initial environmental evaluation (IEE), including an environmental management plan (EMP), to address environmental impact concerns at each of the eight core subproject locations. It prepared consolidated or project-wide environmental reports, including a consolidated IEE, a consolidated summary IEE, and a consolidated environmental management plan (CEMP), outlining the mitigation, monitoring, reporting, and institutional measures that needed to be taken during project implementation. It prepared an environmental assessment and management framework (EAMF) that outlined the criteria for selecting and approval of the additional non-core subprojects, as well as the institutional arrangements for the environmental assessment of non-core subprojects. During project implementation, IEE was prepared for each of 27 non-core subproject locations by the city or county government following the EAMF, and these were approved by ADB.¹

B. Institutional Setup and Capacity Development

2. Institutional arrangements and responsibilities for the implementation of measures and activities were defined in the CEMP and subproject EMPs. The CEMP required that the provincial project management office (PPMO) and each of the 35 local project management offices (LPMOs) have an environment and social management division, including a full-time environment specialist. However, most LPMOs established embankment construction divisions of 5–6 staff members each instead of establishing environment and social management divisions. The staff of these divisions supervised subproject implementation, including site inspections on environmental aspects. Each LPMO engaged a construction supervision company (CSC) whose assigned tasks included supervision and monitoring of the environmental management activities of the contractors. However, the CSCs generally lacked dedicated environmental engineers.

3. Before project implementation started, consultants engaged for the project preparatory technical assistance provided a 1-day training course on environmental management to 50 participants from LPMOs and local environmental protection bureaus (LEPBs). According to the LPMOs, contractors and the CSCs conducted training on environment, health, and safety.

C. Environment Safeguard Measures and Environmental Monitoring and Reporting

4. The EMPs defined the environmental protection measures to be undertaken for the subprojects. They included the main mitigation measures, the monitoring and reporting program, the institutional and contractual arrangements, and the budgets. The environmental impacts of the construction activities were local and temporary. The environmental improvement represented by the enhanced flood management the project provided had indirect social benefits, including a likely reduction of the number of people who might have been injured or

¹ During project implementation, ADB and a staff consultant engaged by ADB reviewed the IEEs for both the 27 non-core subprojects and the 8 core subprojects to verify the accuracy of the information in the IEEs. Of 142 sensitive receptors listed in the IEEs, 7 were removed in 3 non-core subproject locations because these receptors were outside the subprojects' influence—5 receptors in Fenghuang County, 1 in Luxi County, and 1 in Shuangfeng County).

killed by future flooding without the project and the prevention of future damage to property.

5. The environmental monitoring reports summarized some mitigation measures carried out during project implementation (para. 8). These included the identification of such issues as low implementing agency and contractor awareness of environmental management, unclear responsibilities for environmental management, and a gap between the required and actual financing for environmental management. The reports made suggestions on mitigation actions, including awareness-raising and education activities, confirmation and improvement of arrangements for environmental management, and consultations by implementing agencies with residents to improve environmental management. Some improvements were made to environmental management based on these suggestions, but ADB review missions found that some mitigation measures required by the CEMP, particularly for soil erosion, wastewater, water quality, dust and noise, and sensitive receptors, were not properly implemented. The ADB missions and staff consultant provided the relevant LPMOs with guidance to improve the mitigation measures.

6. No complaints on environmental impacts were received during project implementation.² ADB missions found that the project areas were fully landscaped and well-maintained after the completion of works. The operations of the flood protection structures constructed will have no significant negative impacts on the rivers' water levels or water quality or on terrestrial or aquatic flora and fauna.

7. The CEMP and EAMF required two types of monitoring: (i) compliance monitoring by inspection companies to monitor environmental management practices of contractors; and (ii) ambient monitoring of air, water, and noise by LEPBs. For the compliance monitoring, the LPMOs engaged construction supervision companies that generally lacked dedicated environmental engineers, and these companies monitored the environmental management activities of the contractors as part of construction supervision. LEPBs undertook the ambient monitoring for two subprojects (Loudi City and Shuangfeng County) under contracts with the LPMOs. For the other 33 subprojects, the LEPBs undertook the ambient monitoring as part of their routine work at cross sections of upper reaches, water intakes, and monitoring stations, increasing their monitoring frequency. However, the timing, frequency, and locations of the ambient monitoring of some subprojects were inadequate, did not fully capture the environmental impacts of the construction activities, and were not fully consistent with the CEMP.

8. Most of the quarterly progress reports submitted by the PPMO to ADB up to December 2011 failed to cover the performance of contractors on environmental protection, even though this was required by the project agreement. The PPMO submitted 40 environmental monitoring reports to ADB in three batches. They covered 27 of the 35 subprojects and were all disclosed on the ADB website. This fell short of the compliance with the EAMF and the CEMP that was required under the project agreement. The EAMF required the PPMO to submit semiannual reports to ADB on the progress of implementation of subproject EMPs, and the CEMP required the PPMO to submit annual compliance and ambient monitoring program summary reports to ADB.

9. ADB provided the PPMO and LPMOs with support to improve environmental monitoring and reporting. One example was the inclusion of an ADB environment specialist in field

² Since all 35 IEEs were prepared before ADB's Safeguard Policy Statement became effective in January 2010, the IEEs did not include requirements for grievance redress mechanism.

missions. Consulting services by a staff consultant engaged by ADB were made available. The staff consultant briefed the PPMO and several LPMOs on how to prepare monitoring reports and developed standard reporting forms for environmental monitoring reports. This effort was only partly successful. The consultant was not able to visit all 35 subproject sites or raise the widely varying capacities of the city and county governments to the minimum levels needed, since the time the consultant was able to spend in the allocated time for these activities was inadequate, and logistical support from the LPMOs was limited. Following these activities, a quarterly progress report (report 16) submitted to ADB in October 2012 included a summary of environmental management for the overall project, and two reports included results of ambient monitoring—one for 5 of the 35 subprojects (report 22) and the other for 7 (report 35). The PPMO submitted 40 environmental monitoring reports to ADB for 27 of the 35 subprojects in three batches in October 2012, May 2014, and October 2014. Some reports provided relatively detailed and systematic description of activities, but others contained almost no original data.

D. EMP Implementation Costs

10. At appraisal, the project-wide EMP implementation cost was estimated at CNY110.4 million. This included CNY16.1 million for the implementation of mitigation measures; CNY4.1 million for environmental monitoring; CNY10.8 million for administration, compliance inspection, institutional strengthening, and training; and CNY86.9 million for soil and erosion control during and after project implementation. Actual expenses included in the civil works contracts were CNY16.3 million, \$CNY0.2 million higher than CNY 16.1 million estimated for the implementation of mitigation measures.³ ADB has been unable to determine the actual expenses for environmental monitoring; administration, compliance inspection, institutional strengthening, and training; and soil and erosion control during and after project implementation, because the LPMOs accessed multiple sources for the EMP implementation and it was difficult or impossible for ADB to correct the all the records of the expenses from the 35 LPMOs. The environmental monitoring reports for some subprojects showed gaps between the financing required and the financing provided for environmental management, and this was one reason for the overall project's inadequate environmental monitoring and reporting.

E. Lessons

11. **Insufficient interagency planning during project preparation.** The PPMO cited the implementing agencies apparently did not consult some LEPBs during project preparation and this resulted in incorrect information in the IEEs, as well as a low degree of motivation on LEPBs to monitor and address the impacts of construction activities.

12. **Implementation arrangements.** The PPMO found it difficult to coordinate the large number of LPMOs, particularly for data and information collection and reporting. The consulting services provided to the PPMO for project management support constituted only part of the associated technical assistance (Appendix 7) and were insufficient. Environmental consultants provided help to the PPMO only at the start of project implementation.

13. The CEMP provided generic monitoring programs and each EMP did not tailor the generic monitoring programs to the subproject location. Each EMP required the LPMO to

³ Actual expenses for environmental monitoring; administration, compliance inspection, institutional strengthening, and training; and soil and erosion control during and after project implementation are unknown, since the LPMOs accessed multiple sources for the EMP implementation and tracking the actual expenses were difficult or impossible.

finalize the monitoring programs in a monitoring agreement with a LEPB. However, the LPMOs did not have the staff with the professional knowledge needed to do this properly. In addition, city and county LEPBs usually lacked the equipment necessary for sound monitoring. These issues were compounded by the challenge the PPMO faced in managing and reporting on monitoring programmed and undertaking separately by so many LPMOs and LEPBs. In similar circumstances, other ADB and World Bank projects in the People's Republic of China (PRC) have made arrangements that have shown to be more efficient: (i) contracting a single independent environmental monitoring agency at provincial level, where more competent agencies can be found than at the city and county levels; and (ii) including the monitoring in the tasks of consultants for project management support.

14. **Differences between domestic and ADB requirements.** Subproject IEEs are not required under the PRC's regulations. The 35 subproject IEEs, including the EMPs, were prepared to fulfill ADB requirements. ADB requires that monitoring be tailored to identify and address potential impacts of construction activities, but not by the PRC's regulations except in large or highly complex and sensitive projects. Despite the project agreement, the PPMO and LPMOs chose generally to follow domestic procedures rather than ADB's and did not fully integrate the requirements of the CEMP and EMPs into the domestic procedures.

15. **Inadequate environmental monitoring and reporting.** The PPMO cited several reasons for only partial compliance with the project's environmental covenants. It said that it considered the environmental impacts not significant, since ADB had classified the project under environmental category B. Other reasons cited for noncompliance were (i) insufficient interagency planning during project preparation (para. 11); (ii) the PPMO's difficulties in coordinating the large number of LPMOs for data and information collection and reporting (para. 12); (iii) insufficient consulting services for project management support; (iv) uneven levels of monitoring and reporting capacity among the LPMOs and LEPBs; (v) LPMO's choice to mainly follow domestic procedures rather than those agreed with ADB; and (iv) a gap between the required and actual financing for environmental management for some subprojects. The PPMO also stated that ADB's requirements for environmental reporting in the project agreement were unclear. The project agreement required monitoring to be conducted as described in the EAMF and the CEMP, but it did not directly require the submission of environmental reports separately from project progress reports. This differed from the project agreement text regarding involuntary resettlement and ethnic minority development, which clearly stated the requirement for the submission of semiannual M&E reports on land acquisition and resettlement and annual M&E reports on ethnic minority development. The PPMO cited differences in the requirements for environmental reporting described in the EAMF and the CEMP, although both were meant to be complied with. The EAMF required reports semiannually, and CEMP required them annually.

LAND ACQUISITION AND RESETTLEMENT

A. Institutional Arrangements for Resettlement

1. The Hunan Flood Management Sector Project had a provincial project management office (PPMO) and local project management offices (LPMOs), but the implementation and financing responsibilities were fully delegated to the city and county governments involved in the 35 subprojects. The 35 governments had quite strong capacity in implementing land acquisition and resettlement (LAR) in line with the domestic requirements in the People's Republic of China (PRC). This was especially true of the larger project cities, which had conducted more ambitious flood protection works than in the other smaller cities and counties and had thus dealt with heavier LAR tasks.

2. Each of the 35 city and county governments set up a resettlement leading group that included their water resources bureaus and land and resources bureaus. Some of the larger cities managed their subprojects as urban development projects. Implementation capacity was good in these cases, since the LPMOs were led by urban investment companies that included divisions already experienced in LAR. In many other of the subproject cities and counties, however, more effort and time were required for the LAR to be successfully completed than originally expected.

3. The LPMOs had staffing and budgetary limitations and lacked experience in Asian Development Bank (ADB) projects. This made it difficult for the LPMOs to (i) prepare resettlement plans for their subprojects, and (ii) report regularly on resettlement implementation. To address the first concern, ADB and the PPMO agreed to engage Hunan Hydro and Power Design Institute (HHPDI) to be responsible for resettlement plan preparation. The decision was based on the fact that HHPDI had experience in LAR planning for domestic projects and a World Bank hydropower project. This helped speed up the drafting of plans, but in hindsight it reduced LPMOs' ownership of the resettlement plans and led to problems regarding the accuracy of information.

4. An added issue was the fact that the LPMOs' past experience in LAR for water resources and flood control projects had been less relevant for urban development projects which had been going through a major transition in LAR policies and approaches. The LPMOs' approaches to LAR implementation varied slightly, and this was not reflected in a generic template used by HHPDI for the resettlement plans. These approaches were constantly evolving and were recognized by ADB only during LAR implementation. Given the complexity already involved in the plans' preparation and the lack of capacity in many LPMOs, the ADB project team felt that updating the plans was not feasible or necessary. Instead, changes were recorded in the external monitoring and evaluation (M&E) reports.

5. As for LAR implementation, the city and county governments had adequate capacity and experience and had a good understanding of the ADB policy requirements set out in the resettlement plans, because they faced similar issues on domestic projects. The ADB team's main concern, other than to meet ADB procedural requirements, was to ensure that the compensation standards would be adequate. At the time of project preparation in 2005, ADB assured that the standards in the resettlement plans were adequate, based on other ongoing projects. Because project approval was delayed by a year, however, LAR did not start until 2007 or later, and market prices had increased by then due to strong economic growth. This made it difficult for LPMOs to negotiate land and housing compensation with people to be affected by LAR. The result was further delays in LAR implementation and sometimes in the civil works. By

completion, LAR implementation had stretched to more than 4 years in about 60% of the subprojects, up from the initially planned 1–2 years.

6. The PPMO was responsible for overall coordination of resettlement plan preparation, but not for supervising LAR, which was managed by the city and county government agencies—i.e., water resources, land and resources, and audit bureaus, as well as other government bodies. This was standard procedure for domestic projects. Because these agencies focus mainly on technical, financial, and administrative matters, ADB required that the project have external monitors to ensure that ADB’s resettlement policy objectives would be met—i.e., that the affected persons would be compensated and resettled in a timely and adequate manner so that their living conditions, livelihoods, and incomes would be no worse after the subprojects than they were before.

B. Resettlement Plan Preparation and Approval by ADB

7. Each of the 35 subprojects was to require a separate feasibility study report and safeguard documents, and ADB’s safeguard requirements were much more rigorous than the PRC’s domestic ones. Although the PPMO had draft feasibility study reports for all 35 subprojects, ADB decided to process the project as a sector project with eight core subprojects. Safeguard frameworks were developed to help the executing and implementing agencies prepare safeguard documents for the remaining 27 noncore subprojects during implementation. With the help of the ADB team and consultants engaged for the project preparatory technical assistance, HHPDI prepared eight draft resettlement plans for the eight core subprojects. These were approved by ADB prior to appraisal. In June 2008, addendums to resettlement plans for six of the eight core subprojects were submitted to ADB to update the impacts, standards, and costs. Simple tabular formats were used for the addendums to streamline the process, but quality was an issue, and it took two rounds of revisions and 16 months for them to be approved, finalized, and uploaded to the ADB website.¹

8. The 27 other, non-core subproject resettlement plans were drafted by HHPDI and submitted to ADB in four batches during 2007–2009 and approved by ADB during 2007–2015.² The PPMO submitted 22 of the plans to ADB prior to the signing of civil works contracts and the start of LAR, as informally agreed. However, the inadequate quality of the draft plans and ADB’s need to conduct due diligence to confirm their contents prolonged the approval process.³ Furthermore, ADB’s review of the resettlement plans occurred during the update of ADB’s Safeguard Policy Statement (2009), and this meant that there was additional rigor for ADB’s consideration of the plans as time went on. Consequently, finalization of the plans and ADB’s

¹ Since 3–4 years had passed since the data for the original core subproject resettlement plans had been collected based on the feasibility studies, data needed to be updated based on the detailed designs and detailed resettlement measurement surveys. These were to be provided through addendums to the resettlement plans. The update process found that significant changes had arisen in the impacts of most of the core subprojects, all had increased compensation standards, and some involved substantial design revisions to reduce resettlement impacts and costs. As this project was approved before ADB’s Safeguard Policy Statement was approved in 2009, it was not subject to the requirement to update the resettlement plans prior to civil works contract awards. Had this been a requirement, the award of civil work contracts would have been delayed considerably.

² For each of five noncore subprojects (Baojing, Fenghuang, Ningyuany, Xiangtan, and Zhongfang Counties), the resettlement plan, including a due diligence report, was approved by ADB on 28 January 2015 on a post review basis after the loan closing date of 31 December 2014.

³ Subsequent external M&E revealed many differences between the resettlement plans and actual LAR implementation, although these were not deemed to be substantive compliance issues. In most cases, impacts had been reduced, standards had been increased, and the approaches and/or plans adopted to resettle affected households had changed.

approval and disclosure took an average of 18 months, and no less than 12 months at best. Only four resettlement plans were approved and uploaded to the ADB website prior to ADB's approval of civil works contract awards. Three others were approved within 2 months of civil works contract awards.⁴ The quality of the second batch of plans approved September 2007 was better than the first, but prolonged delays occurred in making final corrections. Quality seemed to decline for the third batch. By the time revisions were made, LAR had commenced for five subprojects, and ADB had to request due diligence reports on those activities. The result was further delays. The five plans including the due diligence reports were uploaded only in January 2015, after LAR had essentially been completed. The quality of the plans and the timeliness of ADB's approval improved with the fourth batch submitted. ADB had anticipated this sector project's risk of taking long time for preparation and approval of resettlement plans for the 27 noncore subprojects, due to huge volume of centralized documentation (para. 3). The risk was not adequately resolved, despite considerable efforts by HHPDI, the PPMO, and ADB.

C. Planned and Actual Impacts of Land Acquisition and Resettlement

9. According to the resettlement plans, the 35 subprojects would require the permanent acquisition of 861.9 hectares (ha) of land, including 707.2 ha of collectively owned land. In addition, 553,514 square meters of residential houses would need to be demolished and 4,530 households relocated. Demolition would affect 241 enterprises and institutions. A total of 18,886 people were expected to be affected. The actual figures at completion were 691.1 ha of permanent land acquisition, including 524.1 ha of collectively-owned land; 373,970 square meters of residential house demolition; relocation of 3,090 households; and demolition impacts on 178 enterprises and institutions. A total of 13,427 of people were affected. The impacts were reduced mainly by changing designs to address resettlement issues,⁵ or reducing the width of land loss while achieving the design flood protection levels. Table A11.1 provides a summary comparison of the planned and actual LAR impacts.

Table A11.1: Summary of Estimated versus Actual Land Acquisition and Resettlement Impacts

Type of Impact	Units	Estimate in RP	Actual	Comparison (%)
1. Permanent Land Acquisition				
Collective-owned land	ha	707.2	524.1	74.1%
State-owned land	ha	154.7	164.4	106.3%
Total land	ha	861.9	691.1	80.2%
2. Residential House Demolition	m ²	553,514	373,970	67.6%
Displaced households	number	4,530	3,090	68.2%
Displaced persons	number	17,206	12,141	70.6%
3. Enterprises and Institutions	number	241	178	73.9%
4. Total Affected Persons	number	18,886	13,427	71.1%

ha = hectare, m² = square meter, RP = resettlement plan.

Source: Local project management office data compiled by external monitors.

D. Compensation Policies and Standards

10. The resettlement plans were based on the local governments' compensation regulations for LAR that existed at the time of plan preparation. For some subprojects, compensation

⁴ No ADB requirement for resettlement plan approval prior to civil works contract awards, but this was used as an evaluation measure because this is now a mandatory requirement.

⁵ Some original resettlement plans involved overly complex relocation. Others were too costly to implement, because the people affected requested higher compensation.

standards were later increased significantly based on rising market prices for property. A variety of local methods were adopted to enhance compensation, depending upon the situation. Affected persons were very knowledgeable of these standards, because they were available on websites. As a result, the local governments had to undertake significant consultations and negotiations with those affected before agreements could be reached on compensation amounts. In some cases, agreements could not be reached, and some civil works designs were adjusted or cancelled due to insufficient local funds. Once agreements were made with villages, affected persons, or entities, compensation was paid in full and in a timely manner. All compensation paid matched or exceeded that stipulated in the resettlement plans.

E. Resettlement Implementation—Consultation, Negotiations, and Grievance Redress Mechanism

11. The city and county governments carried out consultations with affected persons early on in the planning of the eight core subprojects. The affected persons and LPMOs appreciated this consultation. The city and county governments continued this in the planning of the 27 noncore subprojects and throughout the implementation of all 35 subprojects. The affected persons were given resettlement information booklets. People were made very aware of the compensation rates and their rights via local media and websites. This intensified and prolonged the negotiations for compensation and resettlement. Urgent works had to be implemented at costs much higher than the original estimates, provided local funding could be raised. Less urgent civil works were cancelled or redesigned to reduce the impacts and costs of land acquisition and resettlement. The affected persons were thus key actors in the resettlement process. No compensation was made at rates lower than those stipulated in the resettlement plans. Once they were signed, the agreements were made known in the local villages and neighborhoods, and the individuals affected finally gave their support to the subprojects. In the end, many of these people were very supportive of the project. This was because their housing and living conditions and house values, which had been negatively affected by flooding before the subprojects, were much improved after the flood control works were completed, as well as by the fact that local investments had now been made possible near the rivers. Affected persons were resettled in the area of their original houses, either in resettlement sites or back on house plots that had been provided within the new flood protection zones. In addition to receiving compensation, they were also beneficiaries of the subprojects' outputs and outcome.

12. Each LPMO followed the domestic procedures for grievance redress, but few formal written complaints were received. This was largely due to the intensive consultation and negotiations that had been carried out under the processes that had been adopted for urban development in Hunan Province. Affected persons raised numerous concerns, and these were discussed in village meetings or between local governments and individual households that did not support the LAR conditions. By spending time to explain national and local regulations and resettlement options, the governments eventually reached the agreements on compensation. Once resettled, the vast majority of those affected were satisfied with the new housing and living conditions. The external monitors compiled a list of informal complaints gathered during their household surveys. The majority were about compensation standards and housing options, and most were resolved by adjusting compensation or giving complainants preferential treatment or incentives.

F. House Relocation and Income Restoration

13. The most serious social impact was house demolition. A total of 3,090 households required resettlement, or an average of 88 households per subproject. The Liling City subproject

required the relocation of 544 households, more than any other subprojects and as originally planned. House demolition and relocation encountered challenges and delays. In some subprojects, the same compensation standards and resettlement policies were adopted for both urban and rural residents. This benefitted rural households. The resettlement houses took a long time to build, (18 months on average), which in turn drove up the costs for renting transition accommodations during the interim.

14. The Huaihua City subproject took innovative approaches to the rural housing. The city government provided housing plots, and each household entered into an agreement with the contractor to build a large 7-story house that would be half owned by the household and half by the contractor, which would lease its half out. The house was provided free to the rural household, which also received cash compensation. In other subprojects, the implementing agencies provided preferential policies to make it possible for affected persons to purchase houses on the market. In the end, most LPMOs choose this solution based on the fact that it could be implemented quickly. It was more costly than other options, however. In subproject areas where land was still available in the city or county suburbs, rural households were given cash to rebuild houses by themselves. All the affected persons moved into their new houses over the 2009–2014 period. Most households have similar or improved living conditions and environments. The affected persons were compensated sufficiently and did not have to incur any costs themselves for this new housing.

15. Although the areas of land lost to the subprojects was significant, the impact on the livelihoods of rural households was not very severe. This was due to the linear alignment of the works, which left much of the lands unaffected. Most of the adults in the affected rural households had non-farm jobs in industry, commerce, or the informal sector. Very little of their income came from farming, especially in areas that had been highly flood-prone, and so the loss of farmland did little to affect their incomes or earning ability. The land compensation was paid directly to rural affected persons, who could use the compensation to expand businesses, build larger houses, or cover other expenses (including expenses for education and health). According to the sample household surveys conducted by the external monitors, the land acquisition did not cause a significant loss of income for most farmers. The per capita income of sampled households increased in line with the local economic development.

16. The project also affected 178 enterprises and institutions. The compensation negotiated included payments for temporary work interruptions. All these enterprises and institutions have been restored, relocated, or helped by local governments to shift into new business activities. In addition to these enterprises, 23 small shops were demolished. Some started new businesses. Others saved the compensation they received for other use. Shops that had operated without licenses still received 90–95% of the compensation granted to the licensed shops.

17. Although the subprojects generally had little effect on livelihoods, some households faced special difficulties due to the need to change their businesses or for reasons of disability or advanced age. The local governments addressed these issues case by case. For example, some received assistance in restarting their businesses, and some were given priority permission to set up shops along new riverbank promenades. Employment was found for older people. The governments also provided skills training. The governments ensured that those eligible for social support were properly registered and received the benefits due to them.

G. Resettlement Cost and Fund Raising

18. The LAR costs for the 35 subprojects totaled CNY805 million, which was 87.3% of the original estimate. This is because many LPMOs faced difficulty in raising additional funds to meet the rising compensation costs, and some decided to scale back the scope of civil works and thus the subproject LAR requirements. (para. 19). Some LPMOs asked why ADB could not provide financing for LAR. The ADB team explained that it was the Ministry of Finance that had decided that the local governments should be fully responsible for these costs.

19. By completion, six subprojects had higher resettlement costs than originally budgeted, since their LPMOs were able to raise the additional funds to pay higher compensation costs. Twelve subprojects were able to implement resettlement within 10% over or under of the amount originally budgeted by minimizing land acquisition and/or house demolition or by implementing the subprojects quickly before the compensation standards and local market prices increased. Another 18 subprojects reduced the costs of LAR by changing the designs of structures or reducing the number of houses constructed. Four changed their designs and built concrete flood protection walls, rather than earth embankments that would have required much wider strips of land acquisition. On average, LAR costs made up 20% of the structural costs. If the full scope of the original subproject plans had been implemented, LAR costs would have increased by 50%–100% and would have comprised 25%–35% of the structural costs.

H. Monitoring and Evaluation

20. Given the complexity of this project, consultants engaged under the associated technical assistance (Appendix 7) help the PPMO and LPMOs establish an internal reporting system, but eventually the LPMOs were unable to maintain this. The LPMOs followed their domestic requirements for reporting on LAR to their city or county governments. The PPMO found it difficult to collect this information and compile consolidated reports for ADB. Nonetheless, the numerous reports prepared by the consultants and submitted to ADB helped provide insights into the physical and financial progress on LAR, though not a complete picture. For this reason, the ADB team placed more emphasis on external M&E. Initially, Changsha Xinghuan Water & Electricity Engineering Technology Development Company (CWEETD) was engaged in 2007 to monitor and evaluate the eight core subprojects. In 2008, the PPMO asked ADB to approve the engagement of a second monitor—Hunan Water & Electricity Consulting Company (HWECC). It was agreed that CWEETD would monitor and evaluate 11 of the 27 noncore subprojects, and that HWECC would monitor and evaluate the remaining 16. CWEETD submitted 10 M&E reports during 2007–2015, and HWECC submitted 8 during 2008–2015. Based on such detailed M&E, the project completion review confirmed that the objective of the project's LAR program has been achieved.

21. The external resettlement M&E required by ADB encountered problems. CWEETD submitted 10 M&E reports during 2007–2015 and HWECC 8 reports during 2008–2015, but this was not done semiannually during the resettlement plans' implementation as was required by the project agreement. This was because many LPMOs did not pay the two agencies in a timely manner as was required by the contracts between the PPMO and the two agencies.⁶ In addition, the PPMO and the agencies did not increase the contract prices when the loan closing date of the project was extended and times of M&E and reporting to be conducted increased

⁶ Each of the two contracts between the PPMO and the two independent agencies included subcontracts, each of which was concluded between the LPMO and the agency. Each subcontract required payments from the LPMO to the agency.

accordingly, since many LPMOs were reluctant to increase the payments under the contracts. The PPMO said one reason for LPMOs' reluctance to pay to the agencies was the fact that the agencies submitted reports to the PPMO and ADB, but did not provide the LPMOs with the reports or feedback. The ADB team intervened in this issue several times to ensure timely LPMOs' timely payments to the agencies. The lack of timely payments to the agencies also affected the quality of M&E investigations and reports. The project completion review finds that ADB should have funded the external M&E from the loan proceeds rather than depending on the borrower's commitment and financing.

I. Conclusions and Lessons Learned

22. The project was complex and took the long period for implementation. It provided lessons, including lessons specific to sector projects. The main ones are as follows:

- (i) Strong institutional systems, capacity, experience, and commitment by local officials make LAR feasible to implement in the PRC.
- (ii) Detailed resettlement plans may not be essential for this type of urban LAR. Instead, merely establishing capacity to manage problems and to work out viable solutions with affected persons is a workable approach in the PRC.
- (iii) It would have been better to have each city or county prepare its resettlement plan. This would have increased the burden on ADB for review, but the contents would have been tailored to each subproject.
- (iv) Resettlement plans may have to be updated continuously for this kind of projects, because new adjustments may be needed by the time the updated plans are reviewed. Because of this potential of constant change, steps by ADB to ensure good quality internal monitoring and external M&E are more important than updating resettlement plans and an effective way to make good progress and meet policy objectives.
- (v) It remains a challenge to develop a comprehensive internal reporting system. However, if the local system is adequate for internal reporting, ADB should not try to set up another parallel reporting system which is only of use for ADB.
- (vi) ADB should fund the external M&E of land acquisition and resettlement rather than risk seeing the executing and/or implementing agencies' fail to provide the necessary funding themselves. This occurred in this project and has been a common problem in past ADB operations.
- (vii) ADB should require that independent agencies undertaking external M&E of land acquisition and resettlement should provide reports and/or feedback not only to ADB and executing agencies but also to implementing agencies that carry out land acquisition and resettlement. This will establish closer cooperation between the M&E and the implementing agencies.
- (viii) The need of establishing resettlement sites in urban areas should be carefully considered, because this is very time-consuming and costly. Alternative options should always be explored and finally decided upon by the affected persons.
- (ix) Design institutes should place more emphasis on LAR impacts and costs when preparing feasibility study reports. Design options should be identified, assessed, and decided by the local governments.
- (x) In urban development projects, particularly those implemented by urban investment companies, it is often difficult to identify the precise LAR impacts and costs—for example, when land will be acquired not only for flood control embankments, but also for use in combination with road construction and greening. This may expand the area and cost of land that will need to be acquired.

ETHNIC MINORITY DEVELOPMENT

A. Background

1. Nine of the 35 subprojects under the Hunan Flood Management Sector Project in the People's Republic of China (PRC) were in the western region of Hunan Province, where ethnic minorities comprise a large proportion of the population. Ethnic minorities were significant beneficiaries of these subprojects, but the subprojects also affected members of these minority groups adversely due to the land acquisition and resettlement required and construction disturbances. As a result, the Asian Development Bank (ADB) Indigenous Peoples Policy (1998) required an assessment of these effects on ethnic minorities and the preparation of ethnic minority development plans (EMDPs) to mitigate adverse impacts and enhance project benefits in ways that were both inclusive of ethnic minorities and culturally appropriate.

2. Because this was a sector project, an ethnic minority development framework was prepared to guide the preparation of individual EMDPs for eight noncore subjects. An EMDP for Sangzhi County core subproject had been formulated and approved during the overall project preparation. The EMDPs were prepared during implementation for the eight noncore subprojects in Jishou City and the counties of Baojing, Cili, Fenghang, Jiangyong, Shimen, Luxi, and Jianghua, by the local project management offices (LPMOs) based on a poverty and social analysis prepared during project preparation, the ethnic minority development framework, and the sample provided by the EMDP already drawn up for the Sangzhi County core subproject. They were approved by ADB in November 2011 and uploaded to the ADB website in January 2012.

B. Ethnic Minorities in the Project Areas

3. About 8.3 million ethnic minorities live in Hunan. They comprise 12% of the province's population. The main ethnic minority groups are the Tujia, which account for 42% of Hunan's overall ethnic minority population, the Miao (29%), the Dong (12%), and the Yao (11%).

4. The 3.2 million ethnic minority people living in the 46 cities and counties in which all 35 of the project's subprojects were located make up about 12% of their total population. The Tujia account for about 49% of these minorities, the Miao about 18%, and the Yao about 15%. About 71% of the ethnic minorities in the cities and counties are located in the nine city and counties for which the EMDPs were prepared.

5. The total population of the nine subproject city and counties is about 3.8 million, including about 2.3 million ethnic minorities accounting for about 59% of the total population. The urban population in these areas is about 0.6 million, or only about 17% of their total population, which is very low by PRC standards due to their remote locations and lower levels of industrial development. On average, the per capita gross domestic product in the nine city and counties is only about 60% of the provincial average.

6. The subproject areas protected by project-supported flood protection structures in the nine city and counties had a total population of about 0.28 million, including about 0.24 million ethnic minorities, or about 87% of the total population. The main groups represented were the Tujia, who made up 51% of ethnic population, the Miao (21%), and the Yao (5%). The differences between these groups and the majority Han group in terms of income, education, and employment structure, were considerable.

7. The government has adopted measures to help the country's ethnic minorities raise their social and economic standards to the level enjoyed by the majority ethnic Han population. This objective is comparable to ADB's policy on indigenous people that aims to develop and improve economic conditions for ethnic minorities. However, ADB's policy has much stricter requirements than PRC's. ADB requires that investments be inclusive of ethnic minorities and benefit them in a culturally appropriate manner. The PRC policy does not require that the design and implementation of a project consider the impacts on ethnic minorities or that it include specific measures to mitigate adverse impacts and enhance project benefits on ethnic minorities. Since the EMDPs that were prepared to satisfy all of ADB's requirements were unique to the city and county governments, the LPMO's buy-in was strong.

C. Project Impacts and Action Plans

8. The project built or rehabilitated flood protection structures, including embankments, flood walls, sluice gates, pumping stations, and diversion channels. The flood protection structures reduced flood risks and benefited the people and economy in areas they protected. The main adverse impacts included (i) construction disturbances, (ii) land acquisition and house demolition, and (iii) health and social risks related to the presence of construction work forces.

9. **Action Plans.** The EMDPs included measures to mitigate potential negative impacts and enhance positive benefits for ethnic minorities in an inclusive and culturally appropriate manner. The mitigation measures sought to (i) protect ethnic minority communities from the disturbance of construction, respecting their religious freedoms, taboos, custom languages, production patterns, living habits, and customs for dismantling and constructing houses; (ii) avoid or minimize land acquisition and house demolition, and provide compensation and resettlement measures to ensure displaced persons would be better off once this was done; and (iii) prevent the spread of communicable diseases. The principal actions aimed at enhancing benefits were (i) the encouragement of women to participate in meetings and project implementation; (ii) the provision of microcredit for ethnic minorities; (iii) the development and promotion of tourism by city and/or county governments; (iv) the delivery of skills training to men and women affected by the subprojects; (v); the provision of construction employment and permanent jobs to local people; and (vi) the provision of other support, such as tax subsidies for small businesses.

10. The LPMOs, through the implementing agencies they were located in as well as through contractors, carried out measures to mitigate negative impacts. The LPMOs were to be directly involved in funding, construction supervision, and project-related employment. The city and county governments were to take a lead in implementing the measures to enhance benefits, such as technical training, raising awareness of communicable diseases, gender mainstreaming, tourism development and promotion, tax subsidies, and microcredit.

D. Implementation Performance and Results

11. **Monitoring and evaluation.** The provincial project management office engaged an independent agency for external monitoring and evaluation (M&E) of the nine subprojects for ethnic minority development, after ADB's approval of the engagement. The first investigation and baseline survey was carried out in February 2008 for the Sangzhi County subproject, and the first M&E report was submitted to ADB in April 2008. After that, a single M&E report was submitted to ADB every year until 2014 that covered subprojects that had progress to report. All seven M&E reports were uploaded to ADB website.

12. **Construction disturbance measures.** The construction contractors reduced noise and disturbance of nearby residents by using the appropriate equipment and seldom working at night. Except on rainy days, the contractors watered to prevent dust and related adverse health and environmental impacts. Any damaged irrigation and drainage systems were repaired, and the pollution of water resource was prevented.

13. **Land acquisition and resettlement measures.** The main adverse impact of the subprojects was the demolition of houses and the related resettlement. The loss of narrow strips of farmland due to land acquisition for the subprojects was less significant, because most affected persons no longer relied primarily on farming for a living, and it constituted only 5%–30% of their incomes. Consequently, the impacts on livelihood and the needs for rehabilitation were minimal. No complaints were made by the ethnic minorities about their customs not being observed. This might be because most of LPMO staff members, particularly in the resettlement divisions, were themselves ethnic minorities and quite familiar with these customs. All ethnic minority groups received the same compensation. Special support was provided for ethnic minority enterprises. The construction of resettlement sites observed the local customs. Representatives from ethnic minority groups participated in the management of the resettlement and land acquisition. All notices were written in Chinese, because Chinese is widely read by the ethnic minorities in the project areas. However, LPMO staff members spoke the ethnic minority languages to ensure the affected persons were aware of their entitlements.

14. **Resettlement issues.** Because some of the affected households were not willing to accept the initially proposed land compensation rates, especially when they lost vegetable lands, the compensation rates actually paid were much higher than those envisaged in the resettlement plan. However, the house compensation standards were the same or slightly lower, since appraisals indicated that the housing to be replaced was of a lower quality than expected. An ethnic minority Chinese medicine hospital in Sangzhi was relocated and began operating at the new site in 2007. All the affected employees were properly compensated and reemployed. Ethnic minorities affected by house demolition had about 1 month to dismantle their houses. After the month, the city's or county's land acquisition and demolition office demolished any remaining parts of the house and cleared all the acquired land.

15. The project completion review found that 1 month allowed ethnic minority people sufficient time to accommodate their customs and dismantle their houses. Some multistoried buildings were built for affected households, but some families decided to build more typical houses instead. The Fenghuang County subproject LPMO adjusted the subproject scheme by minimizing land acquisition and house demolition to meet the country conservation regulations. In Shimen County subproject, the scheme was adjusted to only include land acquisition and avoid the planned house demolition due to high costs. The design of Jishou City subproject was changed. Concrete flood protection walls were built rather than the planned wider earthen embankments to reduce the demolition and resettlement needed. Poor infrastructure in the newly built Luxi County subproject resettlement areas caused great inconvenience for the people who had been relocated and adversely affected their livelihoods and production until this was rectified.

16. Although the local resettlement implementation organizations made great efforts to conduct land acquisition and resettlement in accordance with the resettlement policies and compensation standards, some of the affected persons still suspected that the resettlement compensation rates were too low. They worried about whether the fee would enable them to afford new houses and how they would restore their incomes after their farmlands was acquired. The concerns included the location of the proposed resettlement site, which some felt was too

remote and not easily accessed due to traffic patterns. Some feared their households would experience a lower living standard after relocation due to higher living costs and low income levels. Some had high expectations and wanted much higher compensation. When these requests were not satisfied, they refused to relocate. The M&E reports recommended that local officials make more effective efforts to communicate with affected persons, eliminate their distrust and worries, and win their support for the subprojects.

17. **Grievance redress.** Since land acquisition, house demolition, and construction activities were expected to arouse dissatisfaction and complaints from the ethnic minority individuals to be affected, the city and county governments established many compliant and appeal channels. Affected persons were able to lodge appeals to the government resettlement management organizations; the relevant departments of different levels of the government, including the ethnic minority agencies; and through the media. They were also able to turn to the project's external M&E agencies for resettlement and ethnic minority development. One person who bought a new apartment but could not get used to living in the tall building wanted a new housing plot instead. The local government provided one at a resettlement site. Farmers had previously enjoyed rural cooperative medical care, but could not afford to see a doctor when they became urban citizens if they did not join in the urban cooperative medical treatment. One family, already relocated once for urban development, had to relocate again due to the subproject. This family felt it had sacrificed too much and deserved more compensation.

18. Many of the government resettlement management organizations in ethnic minority towns and villages lacked sufficient resettlement experience. Although they provided housing plots at good locations, and affected ethnic minorities built their houses by themselves, some sites were too far away from their former houses. In Jiangyong County, housing demolition was delayed because the construction of resettlement houses within the relocation district did not start on time. This left many of those who were to be relocated with doubts about the resettlement. Their original enthusiasm and cooperation gradually faded away. As a result, simpler resettlement solutions were found to allow households to resettle nearby. In other cases, schemes were adjusted to reduce impacts and costs.

19. **Communicable disease awareness.** During project implementation, city and county government officials raised awareness to prevent the spread of diseases, including HIV/AIDS. The local communicable disease control offices undertook preventative measures that involved construction workers and local communities as well as the operators of transport equipment and truck drivers. The measures included setting up medical clinics, putting up posters for HIV/AIDS prevention, and education on HIV/AIDS. No new incidence of the disease was reported in the project areas during project implementation.

20. **Gender mainstreaming.** In addition to their family and domestic responsibilities, ethnic minority women play important roles in household production in the project areas that involve both cultivation and non-farm work. Women paid more interest to this project than men. They not only took part in the work during the resettlement activities, but also played an outstanding role in many other aspects of the resettlement process, such as the negotiations over the locations and modes of housing resettlement. About 50% of those who attended the various relocation discussion meetings and consultative conferences were women. Their suggestions, and demands on solving problems related to economic rehabilitation, the demolition of old houses, and moving and building of new houses were fully attended to by the government to ensure a fair distribution of the project benefits to women. The city and local county governments conducted skills training for poor rural women once or twice a year during subproject implementation.

21. **Microcredit.** Local women's federations provided microcredit services to rural ethnic minority women for income generating activities. For example, 1,520 of these women received microloans in 38 townships of Sangzhi County. The average loan size was CNY1,000.

22. **Tourism development and promotion.** Each city or county developed and promoted tourism. For example, Sangzhi County released a compact disc of Sangzhi folk songs. In Fenghuang County, historic buildings were saved from demolition. Shiman County promoted tourism to the Yaner Cave hominid sites, the Xianyang ancient city ruins, and the Erdu Pagoda ruins. Jianghua County was named one of the 10 best counties in Hunan for protecting such intangible elements of cultural heritage as the Yaozu long-drum dance, the Panwang song, and celebrations of the spring lantern festival by lion dances. Jianghua County promoted tourism for the Yao Zu Panwang Festival, a folk culture and tourism festival, a lion dance for the lantern festival, and the Yaozu Tea Culture Festival. Tourism visits to the nine city and counties have increased significantly since 2007 and have benefited ethnic minorities in particular.

23. **Skills training.** Such city and county technical agencies as their agricultural and forestry bureaus and labor and social security bureaus provided special technical training to affected male and female farmers on grain cropping, livestock management, and non-farm skills. They also introduced jobs to migrant labor. Members of the ethnic minorities were also trained for job opportunities during construction of the subproject flood protection facilities.

24. **Other support.** The city and county governments encouraged rural people to engage in secondary and tertiary activities. The governments provided tax incentives, such as increasing the tax threshold for the business taxes and value-added taxes applied to small workers engaged in businesses or newly opened enterprises.

25. **Project employment.** Resettled individuals and ethnic minorities were given preference in hiring for project construction activities. Local workers employed for construction were paid in full without any default and underpayment. Sangzhi County subproject employed 600–700 people. Of these workers, 95% were local residents, and 90% were ethnic minorities. Under each of the nine subprojects for which the EMDPs were prepared, 200–700 people were engaged for construction. Local residents accounted for 70%–95% of the employees, depending on the subproject, and ethnic minorities 40%–96%. In addition, most of the nine subprojects permanently employed 30–40 workers, of whom 70% were ethnic minorities.

26. **Common problems.** Most LPMOs faced large funding gaps, especially in poorer ethnic minority counties. This caused delays in house demolition and resettlement. The problem was exacerbated by the initially low compensation standards offered and the higher expectations of the affected persons. This meant delays in many subprojects and/or the downsizing or adjustment of designs to reduce their resettlement and land acquisition impact and the related costs. The lack of funds also delayed the construction of resettlement sites. In the end, simpler solutions were found to ensure that persons displaced by the project, including ethnic minorities, were satisfied.

27. **Project benefits for ethnic minorities.** The completed subprojects led to benefits for about 0.24 million members of ethnic minorities. Despite some implementation problems, all ethnic minorities appreciated the improvements in flood protection and urban amenities the project provided. Ethnic minorities benefitted from the new or rehabilitated flood protection facilities, as land values increased and living conditions improved.

E. Conclusion and Recommendations

28. The project brought benefits to the ethnic minorities in the subproject city and counties. Some people were adversely impacted by resettlement or temporary construction disturbances. The preparation of EMDPs helped the LPMOs focus on affected ethnic minorities and their unique customs. Although the city and county governments were very familiar with these customs, the higher attention that ADB paid to ethnic minorities and the use of an external M&E agency helped improve consultation, subproject implementation, and resolution of problems. As for the measures to enhance the project's benefits, most of these were part of city and county government programs that were being implemented regardless of the project. Nonetheless, opportunities were taken to integrate these measures with the project's implementation, particularly for those adversely impacted. This approach was appreciated by the LPMOs. However, for future projects, ADB should target such measures and the beneficiaries better.