



Validation Report

Reference Number: PVR-224
Project Number: 33165
Loan Number: 1835
December 2012

Peoples' Republic of China: Yellow River Flood Management (Sector) Project

Independent Evaluation Department

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
EIRR	–	economic internal rate of return
M&E	–	monitoring and evaluation
PCR	–	project completion report
PMO	–	project management office
YRRC	–	Yellow River Conservancy Commission

NOTE

In this report, “\$” refers to US dollars.

Key Words

asian development bank, flood management, independent evaluation department, lessons, people’s republic of china, performance evaluation, yellow river, river basin management

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PROJECT BASIC DATA

Project Number:	33165	PCR Circulation Date:	Dec 2010	
Loan Number:	1835	PCR Validation Date:	Dec 2012	
Project Name:	Yellow River Flood Management (Sector) Project			
Country:	People's Republic of China		Approved (\$ million)	Actual (\$ million)
Sector:	Water resources	Total Project Costs:	404.73	335.41
ADB Financing: (\$ million)	ADF: 0.00	Loan/Grant:	150.00	113.77
	OCR: 150.00	Borrower:	254.43	221.35
		Beneficiaries:		
		Others:	0.30	0.29
Cofinancier:	Danish Cooperation Fund for Technical Assistance	Total Cofinancing:	0.30	0.29
Approval Date:	28 Aug 2001	Effectiveness Date:	8 Sep 2002	11 Sep 2002
Signing Date:	10 Jun 2002	Closing Date:	30 Jun 2006	16 Oct 2008
Project Officers:	T. Miyazato B. Tambunan Y. Kobayashi	Location:	ADB headquarters ADB headquarters ADB headquarters	
Validator:	C. Willoughby, Consultant	Peer Reviewer:	J. Foerster, Evaluation Specialist, IED1	
Quality Reviewer:	C. Kim, Principal Evaluation Specialist, IED2	Director:	W. Kolkma, IED1	

ADB = Asian Development Bank, ADF = Asian Development Fund, IED1/2 = Independent Evaluation Department (Division 1/2), OCR = ordinary capital resources, PCR = project completion report.

I. PROJECT DESCRIPTION

A. Rationale

1. The Yellow River is the second largest river system in the People's Republic of China (PRC), unique in the world for its very high silt load, mostly originating from the extensive Loess Plateau, upstream of Xiaolangdi Dam. Periodic floods have been a significant constraint to the economic growth of this otherwise very productive area. The flood-prone area in the river's lower reach in Henan, Shandong, Anhui, and Jiangsu provinces covers 113 counties—an area of 117,900 square kilometers (km) occupied by an estimated population of 85 million. In this area, 43 counties were identified as being particularly vulnerable to flood.

2. The Yellow River Conservancy Commission (YRCC), the agency responsible since 1933 for the whole Yellow River basin, had prepared a 20-year plan, up to 2020, for the management of the Yellow River water resources. Discussions with Asian Development Bank (ADB) staff and work under a project preparation grant¹ indicated that the most useful way for ADB to support the new initiatives would be through a combination of capacity-building efforts for flood management and physical investments spread widely across the lower reaches of the river, to

¹ ADB. 1999. *Technical Assistance to the People's Republic of China for Preparing the Yellow River Flood Management Sector Project*. Manila (TA 3259-PRC).

strengthen embankments and improve the security of villages within the inner floodplain and immediately adjacent to it. Since these required physical investments were discrete subprojects, they were ideally suited for financing through the sector loan modality.

B. Expected Impact

3. The project was expected to trigger stronger economic growth and increased resident security and environment quality in the lower Yellow River basin, particularly in the areas directly adjacent to the river—22 counties in Henan and Shandong Provinces populated by some 1.8 million people.

C. Objectives or Expected Outcomes

4. Project investments would reduce the incidence of flooding in the lower Yellow River basin and resultant damage, and minimize flood losses in the inner floodplain. Water resource management would be more effectively integrated across the whole drainage basin, with more attention given to environmental aspects and reduction of poverty.

D. Components and Outputs

5. The project comprised four components: (i) development of stronger institutional capacities with better systems, software, and equipment, for managing the river flow, especially floods; (ii) execution of major flood control works including reinforcement of 120 kms of embankment, specifically by adding a diaphragm wall, river-training works for 25 kms, and increasing retention-reservoir capacity; (iii) improvement of village protection in areas more susceptible to floods by constructing very large (typically 5 to 67 hectares (ha) or 23.4 ha on average) raised earth platforms not far from some 50 existing villages whose inhabitants would gradually migrate to the new and safer sites; and (iv) development within the YRCC of a project management office (PMO) to manage and support subproject implementation, liaise with provincial, county and village officials, and ensure adequate attention to environment and social concerns.

E. Provision of Inputs

6. Project expenditure totaled \$335.4 million, 17% below the planned cost. Under-expenditure was particularly underscored in the village flood protection component, with \$24.6 million spent, in comparison with budget provision (including contingencies) of \$62.0 million. Total expenditure on project management including use of consultants and provision of training was almost \$4 million, 13% below the appraisal estimate. ADB loan disbursements totaled \$113.8 million, 24% below the originally expected \$150 million, due mainly to competitive prices offered by contractors and lower interest payments because of delayed use of loan funds. In addition, ADB provided two technical assistance grants: \$970,000 to conduct a study to strengthen basin-wide management,² and \$300,000 financed by the Government of Denmark to help improve flood forecasting.³

² ADB. 2001. *Technical Assistance to the People's Republic of China for the Strategic Planning Studies for the Preparation of the Yellow River Law*. Manila (TA 3708-PRC).

³ ADB. 2001. *Technical Assistance to the People's Republic of China for the Flood Forecasting and Early Warning System in the Yellow River*. Manila (TA 3712[L]-PRC).

F. Implementation Arrangements

7. The Ministry of Water Resources was the executing agency, and YRCC the implementing agency. To coordinate policy aspects relating to project implementation and advise the PMO, a national project steering committee was constituted that included senior representatives from concerned central government ministries and the two provincial governments (Henan and Shandong). However, the committee only met once on 8 July 2002, the day the project was launched.

8. Substantial volumes of work by national consultants supported project implementation. This was consistent with initial plans except with regard to the timing of the small international inputs, which were often delayed by local factors, particularly by long lags in the National Development and Reform Commission's approval of individual subprojects or studies.

9. The risks that concerned ADB the most at the time of appraisal related to the capacity of the YRCC to mobilize for tasks largely new to them, notably the application of ADB rules and standards in land acquisition and resettlement, enforcement of acceptable environmental standards in project design and/or implementation, and adherence to ADB procurement and contracting procedures. These were matters largely handled by the newly created PMO in December 2001, which recruited some staff with relevant prior experience and organized intensive training. ADB required the YRCC to select a company in the PRC to conduct thorough monitoring of land acquisition and resettlement planning and implementation of all subprojects. An independent agency engaged by the YRCC conducted an external resettlement monitoring and evaluation (M&E) and submitted nine external resettlement M&E reports to ADB. The YRCC also engaged an independent environmental supervision agency to monitor environmental protection undertaken by contractors, and selected the Yellow River Water Resources Protection Center to monitor environmental conditions during project implementation.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

10. The project completion report (PCR)⁴ rated the project *relevant*. This validation concurs with the PCR's rating. The project design, combining structural and nonstructural measures to reduce the threat of floods, constituted a major shift toward integrated water resource management in the Yellow River basin. This was fully consistent with ADB strategies for assisting the PRC and for improving the handling of environmental aspects of development in Asia. Moreover, the project served as a useful contribution to the program for the basin, which was included in the PRC's Tenth Five-Year Plan, which emphasized environmental issues. Flood management and institutional measures, combined with embankment and retention reservoir reinforcements, were aimed to increase security for investment and development, promote growth and poverty reduction, and pave the way for further improvements in management of resources across the entire basin.

11. However, with no further details on the flooding problem and no demonstration that the proposed outputs would actually resolve the problem, there is no conclusive proof that the desired impacts will indeed occur. This technical flood hydrology discussion is missing in the

⁴ ADB. 2010. *Completion Report: River Flood Management (Sector) Project*. Manila

PCR. Project preparation should have provided stronger flood hydrology analysis. Because of adverse changes in the fiscal situation of local governments the development of the innovative earth platforms that were to protect inhabitants close to the river, has been delayed. However, the potential for these platforms' success has been quite strongly demonstrated in the projects already serving hundreds of residents in Pingyin County and Dongming. The steering committee, although established, was ineffective as it met only once at the inception. Full potential benefits of ADB's sector lending formula could not be obtained because of difficulties in coordinating with different government bodies in the country. The process, however, improved over time.

B. Effectiveness in Achieving Project Outcomes

12. The PCR rated the project *effective* and this validation concurs. The main nonstructural measures envisaged under the project consisted of the initiatives in data collection, development of mathematical and physical models, and improvement of staff capacities and equipment that were essential to enable the YRCC to implement a more integrated basin-wide management. All the measures envisaged at appraisal were followed up and applied. The main flood-control civil works, which accounted for more than 80% of actual project costs (75% at appraisal), were very much executed as envisaged. Indicators for outcomes on damage and losses in the design and monitoring framework were not provided as evidence of achievement of outcome. Thus, the extent to which outcome is achieved is not conclusive.

13. The flood management initiatives and main flood control works were expected to protect the largest numbers of people from flooding and bring better basin-wide integration of water resource management. But the village protection scheme using raised earth platforms was the project component that would provide the most substantial benefit to those directly affected. Eventually, the number of platforms was cut back to 13 platforms serving 40 villages. Provincial governments and the YRCC inspected and accepted the 13 platforms in May 2008. Yet, as of October 2010, nearly 2.5 years after completion, only one of the six platforms being developed in Pingyin county and one of those in Dongming, substantial numbers of houses, and accompanying infrastructure, had been completed. The PCR cited the following reasons for these shortfalls: (i) local governments' loss of revenue following abolition of taxes on agriculture; (ii) greatly increased unit costs of moving and housing people; and (iii) greater freedom of people to resist moving. Pingyin has been more successful because of its better financial situation, the importance it attached to the subproject, and the attractively convenient location (not far from major urban areas) of its platforms.

14. The significance and scale of achievements on subproject objectives, and the substantial start on widespread implementation of the elevated platform scheme for villages in or close to the embanked river path warrant the PCR's rating of *effective*. However, weak implementation of the village protection initiatives should be noted.

C. Efficiency of Resource Use in Achieving Outputs and Outcomes

15. The PCR rated the project *efficient*, balancing between the high economic internal rate of return (EIRR) and the 2-year project completion delays. This validation concurs. The PCR and other project review documents indicated that consultants and contractors achieved generally high quality standards and delivered good value for money. Applying to all investment subprojects the same methodology used for the three illustrative, initial subprojects at appraisal, the PCR estimated an improved EIRR of 19.5% for the total investment, above the original estimates for any of the three. The EIRRs relate the losses imposed by different scales of flood, multiplied by the probability of such floods occurring, to the costs of constructing and

maintaining the different types of works that were undertaken. The experience so far accumulated indicates that EIRRs earned may be highest on river training and village flood protection schemes, and lowest, but still normally well above 12%, for many of the embankment reinforcements, especially protection of vulnerable spots.

16. The PCR considered these results indicative of highly efficient resource use, but tempers its assessment with concern for the significant delays in starting subprojects due to slow approval process by the PRC authorities. Implementation was generally efficient except for the delays in civil works and resettlement, and cost overrun and coordination issues in the construction of the raised platform. Consequently, the PCR concluded that the project was *efficient*, noting that it could have been a little more so with better coordination among government bodies in reviewing and approving, and timely action on plans. Nonetheless, no major reform seems to have resulted from the project except that the YRCC derived expertise in safeguards aspects for their future projects.

D. Preliminary Assessment of Sustainability

17. The PCR assessed sustainability of the project as *most likely sustainable*. This validation downgrades the rating to *likely sustainable* because the capacity of the YRCC in controlling the environment and social effects of the project is considered limited. The PCR claimed that software, systems, and equipment for the flood management component have been effectively used and maintained. The Yellow River engineering bureaus of the counties made appropriate preparations for taking on the responsibility of the operation and maintenance of flood control works once the YRCC and the provinces have inspected and accepted them. The YRCC has been providing sufficient funds out of its annual budget to cover operation and maintenance costs. Public infrastructure and houses are gradually being built on the completed platforms and villagers are being relocated. The extensive work undertaken by the YRCC on environmental effects of subprojects, land acquisition and resettlement, and economic assessment of different schemes, has created the capacities and practices, which should sustain the commission's broadening approach to its environmental, social, and engineering tasks. However, the YRCC's capacity may be hampered by its limited jurisdiction in handling these important environmental and social aspects.

E. Impact

18. The PCR did not rate impact explicitly but it discussed project impact in environment, resettlement, and poverty, social, and institutional aspects. This validation assesses the overall project impact as *significant*. The project was seen to be focused on poverty reduction and on making a valuable contribution to better flood management for affected residents. The targeted areas close to the river had higher proportions of poor residents due to the poor living conditions. Such places in the project area with higher poverty incidence than average were given priority in the choice of subprojects. Residents in the chosen places benefited in the short term from the substantial number of jobs generated by the contracts.

19. Development of the PMO broadened the YRCC's approach to problems beyond the engineering aspects. The commission's good handling of the subprojects' environmental assessment and action planning—such as consultation, compensation, implementation and monitoring of land acquisition and resettlement—clearly reflects the strong results achieved for this project objective.

20. Women participated in the work and related training, benefiting particularly from more secure conditions to do household activities and gaining access to social services. Women also played an important role in the consultation processes, to which the YRCC gave more attention than it had done in the past, especially in land acquisition and resettlement. Detailed planning was done during project preparation, and adequate funding to project municipalities and counties was promptly made available. The required 1,480 hectares were acquired. The project and local participants worked together to come up with the best combinations between reallocations of land among villagers and distribution of cash compensation received. All 921 households needing resettlement were satisfactorily accommodated, and training opportunities were provided to help them find new sources of livelihood in the new surroundings.

21. The 2009 monitors' periodic survey of a large sample (867 severely affected households) indicated that per capita income increased by 269% from the CNY1,173 baseline established in the 2003 survey to reach CNY4,330 (or \$630 equivalent) in 2008. This meant that the share of households with income above the poverty line had increased from 51% in 2003 to 96% in 2008.

22. Available statistical evidence indicates significant improvement in the living conditions of at least the large majority of those most affected by the project and an increased probability of positive contribution to growth and poverty reduction, more widely in the counties to which they belonged, and more broadly in the areas served by the lower reaches of the river. Negative environmental side effects were successfully confined to the project construction period and were generally well controlled. But, this promising record was damaged by the scale of the shortfall from the objectives agreed by all parties for the village platforms: some 90% in terms of the overall population expected, and 95% for the two-fifths of that population considered extremely poor. These poor families have not only lost either their houses or land but they are numerous (nearly 4,000) and the platforms were to be built specifically to improve their condition. Local governments need to find effective ways forward on this matter.

III. OTHER PERFORMANCE ASSESSMENTS

A. Performance of the Borrower and Executing Agency

23. The performance of the PMO on behalf of the YRCC as the implementing agency was clearly rated strong, but support and cooperation from other parts of government were sufficient to warrant the PCR's *satisfactory* rating for the borrower and the executing agency, the Ministry of Water Resources. This validation therefore adds a note of reserve. The central government fulfilled its commitment for timely provision of counterpart financing, but project implementation was frequently held up—in some aspects for several years—by long delays in issuance of approvals, particularly from the National Development and Reform Commission. Even the signing of the loan agreement was held up for 6 or more months for this reason. The delays seem to be a reflection of bureaucratic overload or interagency rivalry and/or communication weaknesses since the eventual decisions seldom reflected a need for or required any evident alteration to what had been presented. High-level government agencies other than the YRCC seem also to have caused the PRC's persistent failure to fulfill several loan covenants: the holding of six monthly meetings of the project steering committee (at which ADB review missions often discussed urgent issues); and ensuring local governments fulfill their commitments to finance and complete, within 2 years of platform completion, the construction of local infrastructure and housing for the poor.

B. Performance of the Asian Development Bank

24. The PCR rated ADB's performance *highly satisfactory* without discussing the aspects sufficiently. This validation rates ADB performance *satisfactory*, despite some shortcomings. ADB provided strong support to the YRCC from the project's initial conception in 1999–2001, throughout execution, and most intensively during 2004–2007. ADB's experienced advice and thorough reviews made significant difference to what was actually done. Many problems, including weak local government cooperation, shortage of resources for that work, and uncertainties of ultimate impacts, were easily foreseen. ADB attention to project-related revenue-raising matters has tended to focus simply on securing the promised contributions from the local governments. Moreover, another aspect that would have merited more thorough and sustained attention would be the arrangements for generating high-quality economic data for M&E of the actual results of the different types of investments made. ADB's failure to find an effective solution to the local government's intractable inaction on their part in the village platform development is noted.

C. Others

25. Although the main benefits of the project and the key issues surrounding Yellow River basin management are essentially environmental, the potentially negative side effects of the works to be financed were considered sufficiently limited, such that the project could be placed in environmental category B. Initial environment examinations were prepared at appraisal for all three subprojects then covered (and subsequently for all 45 or so follow-on subprojects), and an integrated summary initial environment examination was circulated to the Board members. Negative environmental effects foreseen were essentially temporary and could have been minimized by appropriate contractor performance and supervision. Serious negative effects were avoided. Increased security from the floods for all affected inhabitants in the area was evident. There were various subsidiary positive effects such as the additional watering places for birds and the increased vegetation and trees on rehabilitated embankments and new platforms.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

26. The validation confirms the overall *successful* rating proposed in the PCR. The PCR's rating on preliminary sustainability is downgraded to *likely sustainable* reflecting the limited capacity of the YRCC (see table).

Overall Ratings

Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness in achieving outcome	Effective	Effective	
Efficiency in achieving outcome and outputs	Efficient	Efficient	
Preliminary assessment of	Most likely	Likely sustainable	This validation downgrades the rating to <i>likely sustainable</i> because of the limited capacity of

Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
sustainability			the YRCC in controlling the environment and the project's social effects (para.17).
Overall assessment	Successful	Successful	
Borrower and executing agency	Satisfactory	Satisfactory	
Performance of ADB	Highly satisfactory	Satisfactory	Downgrading mainly due to inability to find a solution to spur village platform developments (para. 24).
Impact	Not rated	Significant	Refer to para. 18.
Quality of PCR		Satisfactory	Refer to para. 31.

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = project completion report, YRCC = Yellow River Conservancy Commission.

Source: ADB Independent Evaluation Department.

B. Lessons

27. The requirement, under ADB's formula for sector lending, of early approval by all parties of a completed feasibility report for each ADB-supported subproject, has additional merit, at least in the PRC experience, of creating opportunity and incentive for perfecting design and introducing savings before actual implementation.

C. Recommendations for Follow-Up

28. Urgent high-level action was required to clarify and resolve difficulties, causing some local governments to renege on promised contributions and actions, without which platforms built under the project, will remain a nonproductive investment. Consequently, none of the benefits that were expected to accrue for large numbers of poor people will materialize.

29. ADB should carefully consider renewing its support for the Yellow River Law and the strengthening of basin-wide management to enable the PRC to obtain the greatest possible economic benefit from the water resources available. Such action could build and reinforce the environmental and social capacities of the YRCC and might well contribute to resolving the financial obstacles hindering effective use of the built village platforms and further replication of this potentially high-return type of investment.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Evaluation Design, Implementation, and Utilization

30. Despite references in the report and recommendation of the President to elaborate arrangements for broad M&E of the project's actual effects on incomes, production, floods, poverty, and access to services, with indicators agreed and participatory rural appraisal techniques to be used, the PCR does not mention whether a database or a system was ever developed or applied for the project.⁵ The project monitoring reports were regular but it is not

⁵ The design and monitoring framework in the report and recommendation of the President and PCR indicated development of social, economic, and environmental analytical capacity, monitoring skills and databases within the YRCC task force to guide the agency and policy and practices.

clear if the figures and information given were appropriately archived. Even at the final stages of project implementation, review reports have had to rely on county-level economic data, supplemented by valuable but limited information generated by the resettlement monitor's sample surveys of people affected by land acquisition.

B. Comments on Project Completion Report Quality

31. The PCR is thorough and clear in its presentation and assessment of the wide variety of the complex subprojects. It systematically addresses the questions raised in PCR guidelines and provides comments that appear balanced and cautious, if sometimes too generous on shortfalls or too formal in weighing fulfillment of covenant. The gaps are in the assessment of the extent to which the project's broader objectives have been achieved, and in the difference that ADB initiatives may have made to what would otherwise have occurred. The gaps reflect the insufficiency of available information that helps address the following questions: (i) How much progress has the YRCC really made in introducing basin-wide integrated water resource management and in systematically covering environmental and social dimensions of its activities? (ii) What progress has the YRCC been able to make in implementing cost recovery, and a related action plan, as referred to in the loan and project agreements? (iii) Why was the PRC nonresponsive to ADB's efforts (such as the June 2006 review mission) to help secure the financing required from local governments? This validation rates the quality of the PCR as *satisfactory*.

C. Data Sources for Validation

32. Records of management and staff review committee reviews, Board papers and summary of discussion at loan approval, project administration manual, back-to-office reports and aide-memoires of annual review missions and special project administration missions, websites of ADB and the YRCC (www.yellowriver.gov.cn), and monitoring reports from companies in the PRC contracted by the borrower to provide independent assessment and support were used for this validation.

D. Recommendation for Independent Evaluation Department Follow-Up

33. Further Independent Evaluation Department work would not be necessary.