

Validation Report
March 2022

People's Republic of China: Comprehensive Agricultural Development Project

Reference Number: PVR-828
Project Number: 43049-013
Loan Number: 2943



Raising development impact through evaluation

ABBREVIATIONS

ADB	– Asian Development Bank
CAD	– Comprehensive Agricultural Development
DMF	– design and monitoring framework
EIRR	– economic internal rate of return
FPA	– farmer professional association
ha	– hectare
PCR	– project completion report
PMO	– Project Management Office
PRC	– People's Republic of China
RRP	– report and recommendations of the President
SOCAD	– State Office for Comprehensive Agricultural Development
WUA	– water users' associations

NOTE

In this report, "\$" refers to United States dollars.

Director General	Emmanuel Jimenez, Independent Evaluation Department (IED)
Deputy Director General	Sona Shrestha, IED
Director	Nathan Subramaniam, Sector and Project Division (IESP)
Team Leader	Payton Deeks, Evaluation Specialist, IESP

The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. To the knowledge of IED management, there were no conflicts of interest of the persons preparing, reviewing, or approving this report. The final ratings are the ratings of IED and may or may not coincide with those originally proposed by the consultant engaged for this report.

In preparing any evaluation report, or by making any designation of or reference to a particular territory or geographic area in this document, IED does not intend to make any judgments as to the legal or other status of any territory or area.

PROJECT BASIC DATA

Project number	43049-013	PCR circulation date	Jul 27 2021	
Loan number	2943	PCR validation date	Mar 2022	
Project name	Comprehensive Agricultural Development Project			
Sector and subsector	Agriculture, natural resources, and rural development	Agricultural drainage Agricultural production Irrigation Rural market infrastructure Rural water policy, institutional and capacity development		
Strategic agenda	Environmentally sustainable growth Inclusive economic growth			
Safeguard categories	Environment		B	
	Involuntary resettlement		B	
	Indigenous peoples		B	
Country	People's Republic of China		Approved (\$ million)	Actual (\$ million)
ADB financing (\$ million)	ADF: 0.00	Total project costs	354.83	299.6
	OCR: 200.00	Loan	200.00	200.00
		Borrower	154.83	99.60
		Beneficiaries	0.00	0.00
		Others	0.00	0.00
Cofinancier		Total cofinancing	0.00	0.00
Approval Date	20 Nov 2012	Effectiveness date	5 Mar 2013	14 Mar 2013
Signing Date	5 Dec 2012	Closing date	31 Dec 2018	31 Dec 2018
Project Officers	Y. Zhou S. Robertson	Location ADB headquarters ADB headquarters	From Sep 2010 May 2015	To May 2015 Dec 2018
IED review				
Director	N. Subramaniam, IESP			
Team Leader	P. Deeks, Evaluation Specialist, IESP*			

ADB = Asian Development Bank, ADF = Asian Development Fund, IED = Independent Evaluation Department, IESP = Sector and Project Division, OCR = ordinary capital resources, PCR = project completion report

*Team members: H. Hettige (Quality reviewer), F. De Guzman (Senior Evaluation Officer), and T. Breckner (Consultant).

I. PROJECT DESCRIPTION

A. Rationale

1. At the time of appraisal in 2013, the People's Republic of China (PRC) accounted for about 8% of the world's arable land, with about 20% of the world's population. It was estimated that feeding the country's growing population with a self-sufficiency rate above 95% would require increasing grain production by 50 billion kilograms during 2009–2020.¹ Moreover, the country's productive natural resources were not evenly distributed. The country's east and south had mountainous terrain, limited land resources, and ample water supplies. The north and west, meanwhile, had ample land resources, arid climate, limited water supplies, and a limited growing

¹ Government of the People's Republic of China, National Development and Reform Commission. 2009. *National Plan for Expansion of Grain Production Capacity by 50 Billion Kilograms during 2009–2020*. Beijing.

season. The country also suffered from a skewed income distribution between the poorer rural areas and the more prosperous urban areas.

2. Efforts to address this two-pronged problem had been, to an extent, successful over the past 3 decades, with a record-high grain production of 546.4 million tons in 2010. However, with its population continuing to grow and the rural–urban income disparity persisting, the PRC needed additional efforts to both increase agricultural production and improve the rural population’s incomes. One source of agricultural production growth was through rehabilitating and expanding water resources infrastructure, particularly drainage and irrigation. The average irrigation water use efficiency nationwide was about 40%. Thus, adopting water-saving irrigation measures could potentially increase water use efficiency, such as canal lining, land leveling, and drip and sprinkler irrigation. However, based on the PRC’s past initiatives, it was clear that simply investing in water resources infrastructure alone would not maximize grain production. Additional investments would be required in land preparation; improved agricultural techniques; and improved access to markets, technologies, and inputs. This approach to enhanced agricultural production had already been undertaken in selected provinces since 1988 through the State Office for Comprehensive Agriculture Development’s (SOCAD) Comprehensive Agriculture Development (CAD) program. This agency under the Ministry of Finance had the experience, expertise, and resources to take on and manage major investments in agricultural development throughout the country.

3. Working through SOCAD, the project intended to (i) improve irrigation and drainage infrastructure on about 117,000 hectares (ha) of land; (ii) provide agricultural support for the improved area; and (iii) upgrade project management within SOCAD and participating provinces and counties. These activities were to be undertaken in 69 counties of Anhui, Jiling, Heilongjiang, Henan, and Yunnan provinces; and Ning Xia’s autonomous region.² These areas are spread out all over the country from the far north (Jilin and Heilongjiang) to the far south (Yunnan) and the midwest (Ning Xia). According to the project’s report and recommendations of the President (RRP)³, these were selected for their assumed potential for increased agriculture production and represented other surrounding provinces. The project modality was an investment project, although an initiative consisting of such a large range of diverse investments is not typical of an investment project.⁴

B. Expected Impact, Outcome, and Outputs

4. The project’s impact was expected to be enhanced food production in the PRC. Its intended outcome was increased agricultural productivity in the project area. The project had three envisaged outputs: (i) improved irrigation and drainage infrastructure, (ii) improved agricultural support, and (iii) improved project management.

C. Provision of Inputs

5. The project was approved in November 2012 and became effective in March 2013, slightly later than the anticipated date. It was closed in December 2018 as planned. The final project cost

² Hereinafter referred to as “the project provinces.”

³ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People’s Republic of China for the Comprehensive Agriculture Development*. Manila.

⁴ An investment project normally has a clearly defined scope of physical work and a generally contiguous project area or areas, such as a highway, a dam, an irrigation system, or a power plant. In this project, county-level implementing agencies identified and undertook smaller subprojects over a geographic area that spread several thousand kilometers apart.

\$291.0 million against the projected \$353.8 million. Of this, the Asian Development Bank (ADB) funded \$200.0 million and the borrower the balance. The lower overall project cost was attributed to the lower than estimated contract price arising from competitive bidding and the Chinese yuan's appreciation during the latter part of project implementation between 2015 and 2017. Contingencies were also not utilized and at completion, a smaller amount of funding was devoted for equipment, research and monitoring, and training and study tours. Funds reallocated during implementation (increasing the loan allocation for civil works) accounted for the increase of ADB funding from 56% to 67%. The borrower's funding decreased accordingly. Provincial and county governments benefited most from these fund reallocations with their contribution to the project cost dropping from 34% at appraisal to 23% at completion.

6. The project's RRP anticipated 780 person months of consulting services, all of which were to be from national consultancy services. The project completion report (PCR) did not provide further details other than affirming that all consulting services were completed and fully financed by the borrower.⁵

7. The project was categorized B for impacts on the environment, involuntary resettlement, and indigenous peoples. It was classified as effective gender mainstreaming (category 2) for gender. A gender action plan was prepared and implemented. Other than the project preparation technical assistance, there was no project-associated technical assistance.

D. Implementation Arrangements

8. Project implementation arrangements followed standard SOCAD procedures for the first 4 years of the project implementation period. SOCAD was responsible for the project's overall planning, coordination, and management of the project as the executing agency and the national project management office (PMO). The implementation responsibility was shared between provincial and county governments. Provincial PMOs were responsible for (i) programming, planning, and coordinating project activities; (ii) implementing project activities relating to technical guidance and training; (iii) procuring goods; and (iv) monitoring and reporting provincial project performance. The existing county CAD offices served as the county PMOs and implementing units responsible for the daily implementation of project activities, quality control, procurement of works and goods, and maintenance of project accounts. These procedures were workable on previous internationally funded projects and were appropriate. However, SOCAD ceased to exist due to a government reorganization during the last year of the project. Thus, managing and supervising the project was transferred to the Ministry of Finance's Budget Evaluation Center. The PCR did not provide assessment as to whether or how this affected the ultimate achievement of the project's results. It was also unlikely that the transfer had any serious repercussions since the transfer was in March 2018. The project was closed in December 2018, with the provincial and county PMOs handling most of the implementation.

9. All applicable covenants were complied with, except one—Heilongjiang province did not meet its commitments to provide counterpart funds on a timely basis. Despite this, the PCR noted that the province implemented project activities at a slightly lower level of outputs than anticipated. There were also some delays in implementing the reporting requirements for the province's safeguard activities.

⁵ ADB. 2021. *Project Completion Report: Comprehensive Agriculture Development Project in the People's Republic of China*. Manila.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

10. The PCR rated the project relevant. The intended project outcome was fully aligned with ADB's country partnership strategies for 2011–2015 and 2016–2020.⁶ The project was also in line with ADB's Operational Plan for Sustainable Food Security in Asia and the Pacific.⁷ The validation notes that, while its focus was on inclusive growth through infrastructure development, the project was also fully aligned with Strategy 2020 and Strategy 2030,⁸ one of the priorities of which is promoting rural development and food security. The project was also in line with the PRC's Twelfth Five-Year Plan, 2011–2015 that highlighted the importance of food security, agricultural productivity, and water resources management.⁹ At completion, the project remained consistent with the PRC's Thirteenth Five-Year Plan, 2016–2020, which continued to prioritize agricultural modernization to ensure national food security.¹⁰

11. This validation finds that the project was strategically aligned, with some concerns on project design. The project area was spread over thousands of kilometers from the PRC's far north (Jilin and Heilongjiang) to the far south (Yunnan). It covered 68 different counties, engaged with 76 different implementing agencies, and undertook a wide range of activities including drainage improvement; planting trees for shelter belts; building farm-to-market roads; and seed warehouse construction. Robust supervision of such a project over a 5-year period either from a donor point of view or an executing agency point of view would have been extremely difficult given the resources available.¹¹

12. For indicators, the project decided to use the metric of average yield for grain crops, cash crops, and vegetable crops rather than increases in crop production, which might be more easily measured. Grain crops include rice, wheat, millet, barely, and maize, among others. These are grown throughout the PRC under a wide range of conditions, with highly variable yields for each individual crop. While actual production can be measured, coming up with an average grain crop yield over a highly dispersed area and over a range of crops dilutes the value of the indicator. Moreover, a more accurate measurement of an increment in yield requires measuring increases in production and increases (or decreases) in area. However, the East Asia Department noted that the purpose of investment in improved irrigation infrastructure and agricultural support is to improve the productivity of agriculture production, which means producing more with less inputs. In this way, measuring by yield is preferred to quantity of production as it controls land inputs and avoids increasing production by expanding land area. Some other indicators were weak, such as the two indicators (indicators 1.6 and 2.6) regarding employment that did not have target numbers associated with them. An indicator for output 3 (improved project management) did not have a baseline or target. With these issues aside, on the whole, this validation assesses the project relevant.

⁶ ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila; and ADB. 2016. *Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020*. Manila.

⁷ ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila.

⁸ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank 2008–2020*. Manila; and ADB. 2018. *Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

⁹ Government of the PRC, National Development and Reform Commission. 2011. *Twelfth Five-Year Plan, 2011–2015*. Beijing.

¹⁰ Government of the PRC, National Development and Reform Commission. 2016. *Thirteenth Five-Year Plan, 2016–2020*. Beijing.

¹¹ It is acknowledged that a project progress monitoring system was set up after approval.

B. Effectiveness in Achieving Project Outcome and Outputs

13. The PCR rated the project effective, given that all outcome indicators were exceeded. The expected outcome was increased agricultural productivity. One indicator was for a 27% increase in grain yields, cash crop yields, and vegetable yields by 2018. According to the PCR, all this target was exceeded with increases in grain (53%), cash crop (353%), and vegetable crop yields (35%). The other outcome indicator (overall irrigation water use efficiency increased) was exceeded on its two components, with 55% efficiency for surface water systems (target 45%) and 76% efficiency for groundwater systems (target 75%).

14. This validation notes that the project exceeded all its outcome performance targets, mindful of the issues on the indicators covered above. Of the 14 output indicators, 8 were achieved or exceeded, 1 partially achieved, and 5 were not achieved. The eight indicators achieved or exceeded included (i) 72,769 ha of surface water irrigation (target: 56,588 ha); (ii) water-saving technology introduced in 105,523 ha (target: 74,495 ha); (iii) 15,928 jobs (50.1% women) in irrigation and drainage (target: undefined, 50% women); (iv) 1,966 km of farm access roads improved (target: 1,866 km); (v) about 90% of farmers using improved mechanized farming (target: 80%); (vi) 10,619 jobs in agriculture support (50.1% women) (target: undefined, 50% women); (vii) various project management trainings and tours (target: undefined); and (viii) the establishment of a project performance monitoring system (PPMS) against no PPMS. The partially achieved target was the establishment and strengthening of 94 farmer professional associations (FPA) with 42% female participation as members and 28.5% as FPA management committee members (target: 117 FPAs, with at least 35% female participate as members and committee members). The five that were not achieved included: (i) drainage improved on about 92,227 ha (target: 117,000 ha); (ii) groundwater irrigation system on 32,754 ha (target: 41,183 ha); (iii) about 33 water users' associations (WUA) formed or strengthened with 37.5% female participation as members and 28.1% female as WUA committee members (target: 68 WUAs formed or strengthened, with at least 35% female participation as members and committee members); (iv) soil improvement in 43,600 ha (target: 67,138 ha); and (v) provision of 4,798 person-months of training with 51.1% female participation (target: 16,904 person-months, with at least 50% female participation).

15. Regarding gender concerns and safeguards, the PCR noted that the project's GAP was successfully implemented.¹² All 12 targets of the seven gender-oriented activities were met to at least an 80% achievement level. There were no major issues reported relating to the environment, involuntary resettlement, or ethnic minorities, because the project primarily entailed onsite improvement and upgrading of existing facilities.

16. With its outcome achieved, its outputs mostly or substantially achieved, and no issues relating to gender or safeguards, the validation assesses the project as effective.

C. Efficiency of Resource Use

17. The PCR rated the project efficient. In assessing the efficiency of resource use, the validation raises the issue on the aggregation of economic benefits for the project sites (i.e., coming up with a single cumulative economic internal rate of return (EIRR) for such a complex and diverse set of activities). In this project's case, a gross cumulative total of benefits was assumed per province. These were then assessed against estimated project costs on a

¹² Footnote 5, Appendix 7.

provincial basis. Despite the method of calculating yields in diverse areas, the RRP came up with EIRRs on a provincial basis and an overall EIRR for the whole project, all exceeding 12%.

18. The PCR used the same methodology to recalculate the EIRRs at the provincial and national levels, and came up with EIRRs of 20.9% for Anhui, 2.7% for Heilongjiang, 21.3% for Henan, 1.8% for Jilin, 11.6% for Ningxia and 30.8% for Yunnan. Three of the six provinces, representing about half of the project cost,¹³ were below the 12% social discount rate. The project's overall EIRR was, however, estimated at 16.4%. Yunnan province's significantly higher EIRR offset the low EIRRs of these three provinces. The validation assesses the project efficient.¹⁴

D. Preliminary Assessment of Sustainability

19. The PCR rated the project most likely sustainable based on the national level's financial internal rate of return and in the six provinces being higher than the weighted average cost of capital. However, this was not a revenue-generating project and, thus, an internal rate of return did not reflect sustainability for this kind of project. For the types of investment included in the project, sustainability depended on the provision of adequate operation and maintenance for the improved structures, facilities, and equipment provided. This, in turn, depended, to a large extent, on the provision of funding for operation and maintenance activities, whether it comes from the government budget, farmers' groups, WUAs, or the individual farmer (for example for a tube well). The PCR provided limited evidence as to how sustainability would be ensured in the project. While stronger FPAs and WUAs were likely to contribute to sustainability, there was no evidence presented to measure the increased strength or competency of these organizations. Similarly, the PCR cited improved project management capacity without providing any evidence of this improvement. No budgetary designations from government or the WUAs were noted, nor any other remarks as to how operations and maintenance would be funded on this project. For these reasons, the validation assesses that the project is likely sustainable rather than most likely sustainable, based on the possibility of strong FPAs and WUAs as demonstrated in similar projects in the PRC.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

20. The PCR rated the project's development impact highly satisfactory given the significant social, economic, and environmental impacts generated. The validation acknowledges the increases in both crop production, as documented in the PCR and the DMF. The figures provided in the PCR as a measure of project impact indicated significant increases in production. Grain output in all six provinces was expected to increase from 663,000 tons in 2009 to 874,000 tons in 2020. At the close of the project in 2018, grain production reached 1,044,000 tons. While this increase was not necessarily attributable to the project, a significant portion of it likely was, given the levels of investment and the broad range of project activities. However, specific individual environmental impacts—either positive or negative—had not been documented. The PCR stated, "many factors external to the project intervention contributed to the rapid growth of grain yield and farm household income during the project implementation period." A significant

¹³ This cost 47% of civils works (\$106 million out of \$227 million).

¹⁴ If the project had been designed as a sector or sector development project, an economic analysis of each subproject would have been undertaken prior to investment during the implementation period. This situation may, thus, have been avoided as less than economically viable subprojects were weeded out.

increase in food production could be attributed to the project, given that it was a major initiative. However, income improvement increases would have also been affected by the PRC economy's major gains over the decade covered by the project period, not least of which would have been a significant growth in remittance income and off-farm employment. The validation, thus, assesses the impact satisfactory.

B. Performance of the Borrower and Executing Agency

21. The PCR rated the borrower's performance satisfactory and noted the achievement of most outputs and outcomes, despite Heilongjiang province not providing its agreed amount of counterpart funding. SOCAD was simply continuing to implement a program that it had been implementing since 1988 and, thus, it was relatively straightforward for SOCAD to complete most of the project works on time. Since physical outcomes and outputs were achieved on time, the validation assesses the performance of the borrower and the executing agency as satisfactory.

C. Performance of the Asian Development Bank

22. The PCR rated ADB's performance satisfactory. The validation notes that ADB's project preparation process did not anticipate the project's design flaws. The PCR noted that changes in mission leaders during the appraisal process may have slowed down project processing. There were also some concerns regarding safeguards supervision. Participation of safeguards specialists in supervision missions was very limited. Monitoring and reporting were weak until the final years of implementation. For the whole project, two social impact monitoring reports were prepared at the end of the implementation period. It did not appear that any comprehensive environmental monitoring reports were prepared. On balance, the validation assesses the performance of ADB satisfactory, since supervisory staff managed to ensure the achievements of outputs, outcomes, and impacts to a satisfactory level.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

23. The PCR assessed the project successful. The PCR ratings were relevant, effective, efficient and most likely sustainable. However, there was no concrete evidence that investments would be sustainably operated and maintained, although strengthened WUAs point in that direction. The validation assesses the project relevant, effective, efficient, likely sustainable, and overall successful.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Effective	Effective	
Efficiency	Efficient	Efficient	
Sustainability	Most likely sustainable	Likely sustainable	There is no evidence that operation and maintenance funding will be available for all the diverse investments.
Overall Assessment	Successful	Successful	
Preliminary assessment of impact	Highly satisfactory	Satisfactory	Despite the increases in crop production and farmer incomes in the project

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
			provinces, these gains were likely not solely attributable to the project.
Borrower and executing agency	Satisfactory	Satisfactory	
Performance of ADB	Satisfactory	Satisfactory	
Quality of PCR		Satisfactory	Para. 28.

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = project completion report.

Source: ADB (IED).

B. Lessons

24. The PCR noted that project supervision required well-defined project impact and outcome indicators, and a monitoring system. Adding a clear definition of the baseline assumption and control group together with a monitoring system at appraisal would have strengthened the project design. It also concluded that, given the number of implementing agencies (6 provinces and 68 counties) and the large number of contracts (657 in all), the preparation of standardized templates for the civil works and goods bidding documents, combining semiannual project progress reports, environmental monitoring reports, and social monitoring reports, were useful for effective project implementation. Finally, it concluded that the experience of the project endorses that the integrated approach, complementing infrastructure investment with institutional and human capacity building, is key to ensuring the sustainability of the project outcome and outputs. These are all valid and useful takeaways from the project.

25. The validation derives an additional lesson from the project. Consideration of the range of alternative modalities helps strengthen the project formulation phase. In the case of this project, this type of assessment could have examined the merits of a project investment vis-à-vis a sector loan in the choice of the modality. If this project had been formulated as a sector project, each of the diverse candidate subprojects would have been analyzed prior to investment, allowing those that were economically unviable or potentially damaging (from an environmental or social point of view) to be dropped and substituted by more viable ones. This would have possibly reduced the oversight burden for the geographically dispersed, multisector projects. In this instance, the executing agency was competent and major issues did not arise. With a less experienced executing agency, the geographic and sectoral scope and range might have proved too challenging without the front-loading of due diligence and screening that a sector project provides.¹⁵

C. Recommendations for Follow-Up

26. SOCAD, the executing agency for the project, was disbanded. Therefore, it is unlikely that any further activity will be undertaken under the project. Investments have been made and the infrastructure provided will or will not be operated and maintained by the provincial and county governments. Thus, further follow-up is not required.

¹⁵ During interdepartmental commenting, East Asia Department noted that, while they had considered a sector loan modality for this project, they ultimately decided against it. This was due primarily to avoid delays. Relatively weak county-level capacity of environmental and social monitoring was observed during the initial project implementation stage. Thus, appraising 69 county-level subproject was considered to constitute a high risk of delaying project implementation.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

27. The PCR reported that a project progress monitoring system was established to monitor all the DMF indicators and the indicators reflecting the development results. These were reported through semi-annual and annual progress reports. However, as noted in this validation, sufficient safeguard monitoring, in line with commitments during appraisal, was not undertaken until later in the project period.

B. Comments on Project Completion Report Quality

28. The PCR was clearly written, although emphasized the positive (i.e., the achievements of output and outcome) while downplaying the negative (low rates of return and less than satisfactory safeguard monitoring). It also did not, in the view of the validation, take an enough critical view of (i) the project design; (ii) the DMF indicators, especially the outcome indicators;¹⁶ (iii) the EIRR methodology; and (iv) the project's efficiency as indicated by low EIRRs. At least some critical analysis and explanation of the figures, and a justification for an efficient rating would have been useful. Nonetheless, the validation assesses the PCR quality satisfactory.

C. Data Sources for Validation

29. Data sources for the validation were the PCR, the RRP, country partnership strategies, national development plans, the PCR of the executing agency, and the midterm review back-to-office report.

D. Recommendation for Independent Evaluation Department Follow-Up

30. It is unlikely that this agency will undertake any further projects. Thus, the Independent Evaluation Department's further follow-up will not be warranted.

¹⁶ They were mentioned in the issues and lessons section.