



Report and Recommendation of the President to the Board of Directors

Project Number: 51116-002
October 2018

Proposed Loan People's Republic of China: Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 24 September 2018)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1458
\$1.00	=	CNY6.8568

ABBREVIATIONS

ADB	–	Asian Development Bank
CPMO	–	county project management office
LIBOR	–	London interbank offered rate
LURT	–	land use rights transfer
NPMO	–	national project management office
NPS	–	nonpoint source
PAM	–	project administration manual
PPMO	–	provincial project management office
PRC	–	People’s Republic of China
YREB	–	Yangtze River Economic Belt

NOTE

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

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 51116-002	
Project Name	Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project	Department /Division	EARD/EAER
Country Borrower	China, People's Republic of People's Republic of China	Executing Agency	Farmland Construction and Management Department, Ministry of Agriculture and Rural Affairs
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Agricultural policy, institutional and capacity development		50.00
	Agricultural production		100.00
	Land-based natural resources management		100.00
	Water-based natural resources management		50.00
	Total		300.00
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	CO ₂ reduction (tons per annum)	480,000
Environmentally sustainable growth (ESG)	Environmental policy and legislation Global and regional transboundary environmental concerns Natural resources conservation	Climate Change impact on the Project	Medium
		ADB Financing	
		Adaptation (\$ million)	118.00
		Mitigation (\$ million)	38.00
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development	Effective gender mainstreaming (EGM)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas Knowledge sharing activities		
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	Yes	Rural	High
Household Targeting	No		
SDG Targeting	Yes		
SDG Goals	SDG5, SDG6, SDG8, SDG13, SDG15		
6. Risk Categorization:	Complex		
7. Safeguard Categorization	Environment: B Involuntary Resettlement: C Indigenous Peoples: B		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		300.00	
Sovereign Project (Regular Loan): Ordinary capital resources		300.00	
Cofinancing		0.00	
None		0.00	
Counterpart		206.80	
Beneficiaries		33.10	
Government		173.70	
Total		506.80	

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the People's Republic of China (PRC) for the Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project. The project will be implemented in five provinces and one municipality in the upper and middle reaches of the Yangtze River Basin, notably the provinces of Guizhou, Hubei, Hunan, Sichuan, and Yunnan; and Chongqing Municipality.¹ The proposed project will promote sustainable and modern farming systems to enhance productivity, reduce nonpoint source (NPS) pollution and environmental degradation, and strengthen institutional capacity for coordinated natural resources management.

II. THE PROJECT

A. Rationale

2. The Yangtze River Economic Belt (YREB) covers nine provinces and two specially administered cities within the Yangtze River Basin. It accounts for more than 40% of the entire PRC population, has 40% of the freshwater resources, serves as the drinking water resource for 400 million people, provides 60% of total fisheries production, has 20% of the total wetland area, and already contributes about 45% of the PRC's economic output. Based on its demographic and geographic assets, the PRC government has earmarked YREB as one of the three key growth engines to ensure the PRC's future economic development.² However, development and economic growth in the middle and upper reaches of the YREB are still undermined by (i) slow transformation into green development and economic diversification; (ii) limited integration of waterways, ports, and intermodal logistics; (iii) increasing pollution and pressure on natural resources; and (iv) weak institutional coordination for strategic planning.³

3. To address these challenges, the Government of the PRC formulated the YREB development plan 2016–2030,⁴ which stipulated the prioritization of ecological protection and promotion of green development as the guiding principle for the YREB development.⁵ In this connection, the Asian Development Bank (ADB) and the government have agreed to adopt a framework approach, providing about \$2.0 billion of funding in the YREB during 2018–2020 to strategically program ADB's lending support for development initiatives in the YREB with priority given to the following four areas: (i) ecosystem restoration, environmental protection, and water resources management; (ii) green and inclusive industrial transformation; (iii) construction of an integrated multimodal transport corridor; and (iv) institutional strengthening and policy reform.

4. In the middle and upper reaches of the YREB, the traditional modes of economic development strongly rely on the rural economy and primary sector. However, unsustainable production practices continue to cause environmental degradation and limit the opportunities for improving rural livelihoods. This has severely impacted the water resources that the quality of the

¹ Selection criteria included: low and medium agricultural productivity; high risk and occurrence of soil erosion; high levels of agricultural nonpoint source pollution; lack of or outdated infrastructure; and the opportunity to implement integrated watershed management in counties with poverty alleviation priority. The selection criteria and process are summarized in Project Administration Manual (accessible from the list of linked documents in Appendix 2).

² The other flagship projects are the Belt and Road Initiative and the Beijing–Tianjin–Hebei Integration.

³ ADB. 2016. *Yangtze River Economic Belt Environmental Protection and Rehabilitation Project: A Preliminary Study*. Consultant's report. Manila (TA 9044-PRC).

⁴ Government of the PRC. 2016. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

⁵ Green development aims to (i) change the traditional development model to a sustainable development model; (ii) address the challenges of rapid urbanization; and (iii) serve as a guide to socioeconomic development.

river water suffers from increasing NPS pollution because of excessive levels of nitrogen, phosphorus, and pesticide entering water bodies through agricultural chemical runoff.⁶ Agricultural intensification has degraded the land resources, driven by changes to land use, deforestation, diminished water availability and quality, soil erosion, and reduced soil quality from overuse of chemical fertilizers and pesticides. The loss of agricultural productivity as a result of land degradation in the PRC amounts to an estimated \$37.09 billion per year.⁷ Moreover, agriculture is highly vulnerable to climate change. Coping with significant variability in future climatic impacts requires efficient water resource management, increased capacity of agricultural support institutions and stakeholders, improvement of the support services to farmers, and more resilient production and ecosystems.

5. The provinces of Guizhou, Hubei, Hunan, Sichuan, and Yunnan; and the Chongqing Municipality support large rural populations and have an agrarian rural economy.⁸ Agriculture, animal husbandry, and fisheries are the main sources of livelihood for the 156.34 million people living in these rural areas, but their per capita disposable income of CNY8,090–CNY12,725 is only 31%–43% of that of their urban counterparts.⁹ While the terrains vary—ranging from steep and high mountains to valley bottoms near rivers—they can all be characterized by outdated agricultural production systems and practices, with inefficient use of land and water resources, high rate of land conversions, prevalent soil erosion, excessive fertilizer and pesticide use, outdated or lacking infrastructure, intensive livestock production with improper waste management and disposal practices, and lack of adequate extension services. The difficult terrain, poor land management practices, and limited opportunities to adopt modern and better practices have caused widespread environmental degradation, which is further exacerbated by a changing climate and extreme weather conditions, posing significant challenges for achieving sustainable agriculture and enhancing agricultural productivity and rural livelihoods.

6. Modernizing the agriculture sector is aligned with the National Agricultural Sustainable Development Plan, 2015–2030 and focuses on investments in (i) the protection of water and soil resources, such as construction of high-standard farmland, protection and improvement of cultivated farmland, provision of efficient, water-saving irrigation, and monitoring of agricultural resources; (ii) agricultural and rural environmental control, specifically waste management, chemical fertilizer and pesticide control, recycling and reuse of agricultural film and pesticide packaging, straw utilization, and rural environmental integrated management; and (iii) environmental rehabilitation.¹⁰

7. Currently, provincial agencies have limited opportunity to cooperate on agricultural development and natural resource management, and to coordinate rural economic development across the YREB because of (i) fragmented responsibilities for natural resource management

⁶ B. Sun et al. 2012. Agricultural Nonpoint Source Pollution in China: Causes and Mitigation Measures. *AMBIO*. Issue 41. pp. 370–379.

⁷ X. Deng and Z. Li. 2016. Economics of Land Degradation in China. In E. Nkonya, et al. *Economics of Land Degradation and Improvement: A Global Assessment for Sustainable Development*. pp. 385–399. Beijing: Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-319-19168-3_13

⁸ The contributions of the rural population and the primary industry to the provincial or municipal gross domestic product (GDP) are as follows: Guizhou (55.8% and 15.7%), Hubei (41.9% and 11.2%), Hunan (47.3% and 11.3%), Sichuan (50.7% and 11.9%), Yunnan (54.9% and 14.8%); and Chongqing (37.4% and 7.3%). For the country as a whole, the rural population contributes 42.6% and the primary industry contributes 8.6% to the national GDP.

⁹ The provincial per capita GDP is as follows: Guizhou (CNY33,246), Hunan (CNY46,382), Hubei (CNY55,665), Sichuan (CNY40,003), and Yunnan (CNY31,093). The per capita GDP of Chongqing Municipality is CNY58,502. The national per capita GDP is CNY53,980.

¹⁰ Released on 20 May 2015 by the Ministry of Agriculture, the Ministry of Environmental Protection, the Ministry of Finance, the Ministry of Land and Resources, the Ministry of Science and Technology, the Ministry of Water Resources, the National Development and Reform Commission, and the State Forestry Administration.

across the various agencies, (ii) competing priorities and policies within and across sectors, and (iii) limited options and mechanisms for upstream–downstream coordination. A new approach is needed to achieve integrated management and green development that can balance natural resource management; improve agricultural productivity and thus food security; and increase the resilience of the environment and people. This will require (i) synergies with other social, economic, and environmental objectives; (ii) enhanced cooperation and coordination within and between provinces beyond administrative barriers; (iii) responsible and inclusive governance; (iv) organized planning; and (v) stronger institutional capacity and cooperation.

8. The “Green Ecological Corridor” is an integrated management approach that aims to unite management and development priorities within the YREB. It aims to restore ecological health by managing the functional ecological zones, strengthening water source protection, applying soil and water conservation, and putting in place risk prevention and control measures.¹¹ This requires a combination of policy support, targeted research, financial incentives such as eco-compensation, and structural mechanisms to promote integrated and sustainable farming systems to protect and rehabilitate the ecological environment while promoting green economic development.¹² Applied at the scale of the watershed, which serves as the natural environmental management unit, it can enable comprehensive and unified management of natural resources as well as cooperation to share experiences and lessons, and focus on green growth rather than the traditional development model.

9. In line with the State Council’s guidelines to build an “ecological civilization”,¹³ the National Development and Reform Commission prepared the YREB Development Plan 2016–2030, emphasizing green development, environmental protection, rehabilitation, and management of water resources (footnote 4). The plan specifically aims to (i) facilitate conservation and highly efficient utilization of natural resources; (ii) strengthen management efforts to improve environmental quality as the core purpose; and (iii) prioritize ecological protection and restoration, and the strengthening of water environmental management.¹⁴

10. **Strategic fit.** The project will protect the ecological environment, improve water security, increase resilience to climate change, and improve the livelihoods of people. Thus, it is consistent with (i) the PRC’s Thirteenth Five-Year Plan, 2016–2020, which aims to realize “ecological civilization”;¹⁵ (ii) the National Agricultural Sustainable Development Plan, 2015–2030 (footnote 10), which promotes agricultural reform and modernization; (iii) ADB’s Strategy 2030’s operational priorities for rural development and food security and strengthening governance and institutional capacity;¹⁶ (iv) the country partnership strategy for the PRC, 2016–2020, which aims to improve the PRC’s environment and manage climate change by realizing “ecological civilization”;¹⁷ (v) ADB’s Water Operational Plan, 2011–2020, which aims to increase efficiency and productivity in

¹¹ Government of the PRC. 2016. *Yangtze River Economic Belt: Building the Green Ecological Corridor*. Beijing.

¹² Eco-compensation is a system of incentives and disincentives by both users and producers of ecological services. Incentives refer to a reward or compensation for a right that is forgone to maintain a certain ecosystem service.

¹³ “Ecological civilization” refers to achieving harmony between growth, people, and nature; requiring people to respect, protect, and maintain a harmonious relationship with nature. It includes to mitigate ecological damage, relieve pressures on natural resources, and improve the balance between the environment and the economy.

¹⁴ Government of the PRC. 2016. *Notice of the Guidelines on Strengthening the Environmental Pollution Prevention and Management in Yangtze River Golden Waterway*. Beijing.

¹⁵ Government of the PRC. 2015. *Outline of the Thirteenth Five-Year Plan on National Economic and Social Development, 2016–2020*. Beijing.

¹⁶ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

¹⁷ ADB. 2016. *Country Partnership Strategy: Transforming Partnership: People’s Republic of China and Asian Development Bank, 2016–2020*. Manila.

the delivery of water services;¹⁸ (vi) ADB's Environment Operational Directions, 2013–2020, which promotes green growth, natural capital, good governance, and responding to climate change;¹⁹ and (vii) ADB's Operational Plan for Agriculture and Natural Resources, which promotes greater productivity and stronger efficiency in using resources; and greater food safety and quality.²⁰ It is also in line with the Sustainable Development Goals 5, 6, 8, 13, and 15.²¹

11. **Lessons.** The project proposes an integrated and cross-sector approach to combine structural and nonstructural interventions, including enhancing cooperation between the provinces. It incorporates lessons in agricultural and environmental management such as (i) climate-smart agricultural practices,²² (ii) watershed-level approach to integrated management of water resources, and (iii) enhanced coordination for watershed and river basin management and protection through ecological corridors. The project also builds on experience from the ongoing Comprehensive Agricultural Development Project,²³ capturing the strong project management capacity and arrangements from the central government's supervision and coordination which provides implementation support and guidance to achieve the overall project goals.

B. Impact and Outcome

12. The project is aligned with the following impact: environmental protection, rehabilitation, and management of the Yangtze River improved (footnote 4). The project will have the following outcome: sustainability and modernity of agricultural production systems in participating project watersheds increased.²⁴

C. Outputs

13. **Output 1: Modern farming systems constructed.** The output will overhaul outdated and inefficient production systems, making them more efficient, productive, and clean. The output will (i) construct 1,326 kilometers of irrigation and drainage infrastructure, servicing 32,900 hectares (ha) of farmland; 1,610 kilometers of farm access and tractor roads; and 3,535 water storage ponds for irrigation and affiliated water-saving irrigation systems and equipment; (ii) support the uptake of sustainable and locally appropriate climate-resilient land and crop management practices, such as 159 ecological farming sites, 8,104 ha of land levelling, returning straw residue to 3,287 ha of farmland, and 2,320 ha of conservation tillage; and (iii) provide equipment and materials to implement sustainable and modern farming practices, such as 23 sets of farm machinery, 80 ha of greenhouses, and 12,000 square meters of citrus distribution center.

14. **Output 2: Waste and environmental management systems strengthened.** The output will tackle the problems arising from inefficient management of livestock and cropping waste that contribute to NPS pollution. It will improve the environmental quality through soil and water conservation practices. It will (i) apply and promote waste management systems in cropping (collection of plastic film, and fertilizer and pesticide containers for recycling); (ii) establish

¹⁸ ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

¹⁹ ADB. 2013. *Environment Operational Directions 2013–2020: Promoting Transitions to Green Growth in Asia and the Pacific*. Manila.

²⁰ ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila.

²¹ United Nations. 2016. *Sustainable Development Goals*. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

²² Climate-smart agriculture systems: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gas emissions, where possible.

²³ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for Comprehensive Agricultural Development Project*. Manila.

²⁴ The design and monitoring framework is in Appendix 1.

livestock waste management systems by building biogas plants (21,400 cubic meters), village waste management units (20,308 cubic meters), and organic fertilizer processing plants (400 cubic meters); (iii) promote the use of organic and balanced fertilizers to protect farmland and optimize crop nutrient requirements (25,193 ha); (iv) promote watershed protection and erosion control through reforestation or afforestation of ecological forests and forest shelter belts (11,000 ha), the planting of high-yield and climate-resilient tree and crop varieties (23,425 ha), and protection of sloping land (2,652 ha); and (v) provide 31 sets of equipment for watershed pollution monitoring, and 25,193 sets of integrated pest management materials and equipment.

15. Output 3: Institutional, technical, and management capacity and coordination strengthened. The output will bolster institutional capacity and coordination to enable a more unified development pathway. It will (i) raise awareness, promote new technologies, and improve agricultural extension services for farmers and farmer organizations; (ii) enhance environmental protection through organizational capacity building, research projects, and policy studies, such as institutional and legal reform as well as sustainable financing mechanism for protecting Yangtze River in cooperation with the China Council for International Cooperation on Environment and Development;²⁵ and new technology for modern farming, such as irrigation technologies; (iii) support collaboration across ministries; and (iv) promote trans-provincial cooperation and coordination mechanism.

16. Project features. The project features include introducing (i) modern farming practices to enhance productivity; (ii) climate-smart farming practices such as water-saving measures for drip irrigation and water capture technology (adaptation), and balanced fertilizer use and reforestation (mitigation) to enhance climate resilience; (iii) technologies to reduce pollution such as integrated pest management and promotion of organics; and (iv) work at the watershed level to maximize the benefits of environmental rehabilitation and improved natural resource management.

17. Value additions. ADB's intervention will add value through institutional, policy, and governance strengthening, and knowledge creation for improving trans-provincial cooperation and coordination. This will build upon ADB's previous knowledge work on the Core Environment Program of the Greater Mekong Subregion Cooperation, creating stronger connectivity and cross-sector links for land use planning based on ecological functional zones, and encouraging greater involvement of local stakeholders to achieve an overall and sustainable improvement in people's lives and the environment. Lessons and knowledge from this project on agriculture development balanced with natural resources and river basin management will be replicable and relevant to other key river basins in the Asia and Pacific region.

D. Summary Cost Estimates and Financing Plan

18. The project is estimated to cost \$506.8 million (Table 1). Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).²⁶

²⁵ The China Council for International Cooperation on Environment and Development is an international advisory body composed of high-level Chinese and international experts in the field of environment and development that undertake policy and applied research based with the Ministry of Ecology and Environment.

²⁶ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Table 1: Summary Cost Estimates
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Modern farming systems constructed	188.9
2. Waste and environmental management systems strengthened	204.0
3. Institutional, technical, and management capacity and coordination strengthened	23.8
4. Project management	30.6
Subtotal (A)	447.3
B. Contingencies^c	40.8
C. Financing Charges During Implementation^d	18.6
Total (A+B+C)	506.8

^a Includes taxes and duties of \$16.8 million. Such amount does not represent an excessive share of the project cost. The government will finance taxes and duties of \$5.2 million through cash contribution.

^b In 2017 prices as of 13 December 2017.

^c Physical contingencies computed at 5% for all expenditure categories excluding beneficiary contributions at 0%. Price contingencies computed at average of 1.6% on foreign exchange costs and 2.5% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction for the ordinary capital resources loan has been computed at the 5-year United States dollar fixed swap rate plus an effective contractual spread of 0.5%. Commitment charges for the ordinary capital resources loan will be 0.15% per year to be charged on the undisbursed loan amount.

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

19. The government has requested a regular loan of \$300.0 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; a commitment charge of 0.15% per year; and such other terms and conditions set forth in the draft loan and project agreements. Based on the straight-line method, the average maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per year. The government will make the loan proceeds available to the provincial and municipal governments, which in turn will make the loan proceeds available to the county governments through the prefecture governments on a grant basis and with proper arrangements acceptable to ADB.

20. The summary financing plan is in Table 2. ADB will finance the expenditures in relation to civil works, goods, consulting services, and capacity development activities. Taxes and duties are included in the base cost. The central government will finance the financing charges during implementation. The provincial and county governments will finance civil works, training and capacity development activities, monitoring, and taxes and duties; and will ensure that the counterpart funds for the project are provided in a timely manner. The beneficiaries will finance the costs for tending and maintaining the protection trees over a 3-year establishment phase, which will include labor and inputs such as fertilizer, pesticides, and equipment.

Table 2: Summary Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (regular loan)	300.0	59.2
Provincial and county governments	155.0	30.6
Central government	18.6	3.7
Beneficiaries	33.1	6.5
Total	506.8	100.0

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

21. Climate mitigation is estimated to cost \$63 million and climate adaptation is estimated to cost \$197 million. ADB will finance 60.3% of mitigation costs and 59.8% of adaptation costs.

E. Implementation Arrangements

22. The Office for Comprehensive Agriculture Development is the National Project Management Office (NPMO) in the Ministry of Agriculture and Rural Affairs which will be the executing agency responsible for the overall planning, financial management, coordination, and management of the project.²⁷ The Provincial Project Management Office (PPMO) of each participating project province and municipality will be the implementing agency responsible for daily project preparation and management, procurement of works and goods, and maintenance of project accounts. The County Project Management Offices (CPMO) will serve as the project implementation units, which will be responsible for the daily implementation of project activities and quality control. The proposed institutional arrangements are based on the ADB-financed Comprehensive Agriculture Development Project (footnote 23) and take into account five key lessons: first, to effectively coordinate and manage project activities across multiple provinces, overall coordination at the state level is required. Second, already being responsible for agricultural infrastructure investment and development projects, the PPMOs and CPMOs have existing skills in procurement and will be able to quickly learn and adopt ADB's regulations and requirements. Third, PPMOs and CPMOs existing financial management capacity supports strong financial management and timely project disbursement. Fourth, proven operational mechanisms are in place to streamline project management including the annual work planning, monitoring, and reporting, thus reducing the time for the project to become effective and ensuring overall management during implementation. Finally, established and tested implementation manuals exist from the ongoing project that will be used to guide financial management, procurement, and project progress as well as safeguard monitoring and reporting. The implementation arrangements are summarized in Table 3 and described in detail in the PAM.

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	June 2019–June 2024		
Estimated completion date	30 June 2024		
Estimated loan closing date	31 December 2024		
Management:			
(i) Oversight body	Ministry of Agriculture and Rural Affairs		
(ii) Executing agency	National Project Management Office Office for Comprehensive Agriculture Development, Farmland Construction and Management Department, Ministry of Agriculture and Rural Affairs		
(iii) Key implementing agencies	Provincial Project Management Offices for the provinces of Guizhou, Hubei, Hunan, Sichuan, and Yunnan; and for Chongqing Municipality through respective provincial and/or municipal government		
(iv) Implementation units	County Project Management Offices of 47 cities and/or counties through their respective government		
Procurement	National competitive bidding	521 contracts	\$316.7 million
	Shopping	56 contracts	\$3.2 million
Consulting services	Quality- and cost-based selection, consultant qualifications selection, and/or individual consultant selection	multiple contracts	\$3.1 million

²⁷ The Office for Comprehensive Agriculture Development, the executing agency for Loan 2943-PRC (footnote 23), was relocated from the Ministry of Finance to the Ministry of Agriculture and Rural Affairs. The office retains the same staff, capacity, and operational mandate for project management and implementation.

Aspects	Arrangements
Retroactive financing and/or advance contracting	Advance contracting and retroactive financing were expected for selected civil works and goods. Retroactive financing will be subject to a maximum amount equivalent to 20% of the loan amount for eligible expenditures incurred prior to loan effectiveness, but not earlier than 12 months before the loan agreement is signed.
Disbursement	The loan proceeds will be disbursed following ADB's <i>Loan Disbursement Handbook</i> (2017, as amended from time to time) and detailed arrangements agreed between the government and ADB.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

23. The project was prepared in accordance with the PRC's guidelines and regulations, and the consultants' recommendations during project preparation were considered. The technical feasibility was confirmed to be adequate after detailed examination of the project's compatibility with local conditions. A climate risk and vulnerability assessment rated the climate change impact on the project as *medium high* because of projected increases in annual mean temperatures and precipitation as well as more intense and frequent extreme weather events (e.g., droughts, severe storms). The project addresses these concerns through the application of water-saving irrigation measures, better crop varieties, and stronger disease control.

B. Economic and Financial

24. The economic analysis indicated that the project is economically viable, with an overall economic internal rate of return of 17.7% and an economic net present value of CNY3,511.3 million. The analysis also confirmed the economic viability of all subprojects, with economic internal rates of return between 12.4% and 22.4%. The sensitivity analysis indicated that the project is robust to the negative scenarios examined, such as an increase in investment costs, a reduction in revenues, and an increase in operation and maintenance costs. The full economic benefits of the project are expected to be significantly higher because some effects such as ecological benefits are not easily quantifiable. The financial analysis included an assessment of the project's financial sustainability, and of the financial management capacity of the executing and implementing agencies. The financial sustainability assessment covered the fiscal impact of counterpart funding for the project and incremental recurrent costs such as operation and maintenance expenditures. It confirmed the financial sustainability of the project, and the fiscal impacts are well within the government's projected revenue capacities.²⁸

C. Governance

25. The financial management risk before considering mitigation measures is *moderate* mainly because of a moderate inherent risk, low control risk, and the comparatively high level of financial management capacities. Measures to mitigate the identified financial management risks are in the financial management assessment.²⁹ The procurement risk assessment confirmed that the implementing agencies, which will conduct procurement through a procurement agency and with the assistance of ADB and the consultants, have adequate procurement capacity to comply

²⁸ For all five provinces and one municipality, the counterpart funding commitment and incremental recurrent costs are less than 0.01% of projected revenue.

²⁹ Financial Management Assessment (accessible from the list of linked documents in Appendix 2).

with ADB's Procurement Guidelines (2015, as amended from time to time) and the Guidelines on the Use of Consultants (2013, as amended from time to time). ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the NPMO. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty, Social, and Gender

26. **Poverty and social.** The project is classified as targeted intervention-geographic (TI-G) for poverty reduction. The project's support for rural livelihoods will benefit 1.787 million people in poor and less developed rural areas—724 villages, 144 townships, and 47 counties—of five provinces and one municipality. Of these 31 counties are national- and/or provincial-level poverty counties, and the poverty ratio in the project area is high.³⁰ The project will significantly contribute to poverty reduction by involving many farmers in the development of high-quality farmland, by introducing modern farming and environmental management practices as well as voluntary land leasing, and by building human capital. The project will provide 25,078 full-time and 45,883 part-time jobs for local people, including the poor, ethnic minorities, and women. Consultations with farmers and stakeholders took place during project preparation, and resulting measures were included in the social development action plan.

27. **Gender.** The project is classified as effective gender mainstreaming. It will particularly benefit women, who are the majority workforce in the agriculture sector. In the medium and long term, the newly restored high-quality farmland and modern farming practices will expand women's access to economic opportunities. The environmental management and training programs will increase their capacity and improve their living environment and quality of life. In the short term, the project will provide women with access to construction and operation jobs during implementation. It will increase women's voice in decision making through their active participation in the design and implementation of project activities. A gender action plan was prepared based on gender analyses and local consultations; and it includes specific targets for women, including at least (i) 40% participation of women in design and implementation of farming and environmental management; (ii) 40% participation of women in training and capacity building for farmers; (iii) 30% of jobs for women in project construction and operation works; (iv) 40% of jobs for women in the operations of farmer cooperatives; and (v) 30% participation by women in training provided to each CPMO and/or PPMO. Key gender indicators were included in the design and monitoring framework.

E. Safeguards

28. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows:³¹

29. **Environment (category B).** The project is classified as category B, and an initial environmental examination and consolidated environmental management plan was prepared by the NPMO and PPMOs in accordance with the requirements of the Safeguard Policy Statement and was disclosed publicly and posted on the ADB website on 1 October 2018. These documents are consistent with and complement the domestic environmental impact assessment report that

³⁰ In 2016, the poverty incidence in the project areas was 21% in Yunnan, 15% in Guizhou, 6% in Sichuan, 5% in Hunan, and 3% in Hubei provinces, and 4% in Chongqing Municipality.

³¹ ADB. Safeguard Categories. <https://www.adb.org/site/safeguards/safeguard-categories>.

meets the requirements of the PRC's Environmental Impact Assessment Law (2016) and relevant regulations.³²

30. The environmental assessment confirmed that the project is expected to generate multiple and significant environmental benefits, such as (i) a decrease in the application rate and total quantity of chemical fertilizers and pesticides, and contribution to the control of NPS pollution in the project region; (ii) less soil erosion and better soil quality; (iii) recycling of agricultural waste and its reuse as fertilizer resource, and promotion of green agricultural development; (iv) better water use efficiency; and (v) stronger climate resilience. These will contribute to the improvement of the Yangtze River's ecological and environmental quality, and the development of sustainable agriculture. Major adverse impacts were not identified. Some counties may increase their overall water use, but they are all located in areas where water resources are more abundant. Potential erosion risks can be mitigated adequately. The impacts on water quality or eutrophication are considered negligible because the use of agrochemicals per hectare will be reduced. Project activities will not be carried out in environmentally sensitive areas. It is expected that all impacts will be prevented or minimized to an acceptable level by implementing the environmental management plan and monitoring program.

31. **Involuntary resettlement (category C).** The project will not involve involuntary land acquisition and resettlement impacts. Of an estimated total 1,400,622 *mu* of land area under the project construction activities, 1,348,905 *mu* is managed and operated by the beneficiary farmers, where agricultural activities will be undertaken that do not involve any land use rights transfer (LURT).³³ The construction of farming facilities will take place on existing rights of way or on unutilized land (5,379 *mu*) donated by beneficiary villages. The plantation activities will be undertaken mostly on unutilized slopes (45,938 *mu*) leased by cooperatives. In addition, existing state-owned land (400 *mu*) will be used for bridge and embankment upgrades. A due diligence review of the LURT and donation agreements confirmed that these are voluntary and based on consultations and provide fair benefits to farmers. In addition, a LURT framework was prepared for future transfers that may be needed during project implementation. Consultations were held during project preparation with local people, village committees, and farmer cooperatives, who will be further consulted during project implementation. Specific grievance redress mechanisms were set up and incorporated into the LURT framework. The project will engage an external monitoring agency to verify or monitor the LURT agreements, and semiannual social monitoring reports will be submitted to ADB during project implementation.

32. **Indigenous peoples or ethnic minorities (category B).** The project area in Guizhou Province has 44.19% beneficiaries belonging to ethnic minorities and 27 ethnic minority villages. The project area in Yunnan Province has 4.6% beneficiaries belonging to ethnic minorities and four ethnic minority villages. Project areas in other provinces either do not have or have only very small percentages of scattered ethnic minority populations. The ethnic minority communities, particularly in Guizhou and Yunnan provinces, are expected to benefit from the project through employment opportunities, modern agriculture, better environmental management, and capacity building. The ecological protection activities are not expected to involve impacts of involuntary displacement or restrictions for ethnic minorities. An ethnic minority development plan was prepared in consultation with relevant stakeholders, including ethnic minority communities. The plan will promote ethnic minority communities' participation in and benefits from project activities,

³² Government of the PRC, People's Congress. 2003. *Environmental Impact Assessment Law of the People's Republic of China*. Beijing.

³³ A *mu* is a Chinese unit of measurement (1 *mu* = 666.67 square meters or 0.067 ha).

and adverse impacts to them are avoided or mitigated. The plan was disclosed publicly and posted on the ADB website on 6 December 2017.

33. **Capacity for social measures.** The NPMO has experience in implementing an ADB project, but most PPMOs and CPMOs do not. To implement the social measures properly (i) the NPMO, the PPMOs, and the CPMOs will each appoint focal social staff; (ii) focal social staff will be provided with training in social measures; (iii) consultants will be recruited to assist in the implementation and internal monitoring of social measures; and (iv) an independent monitoring agency will be recruited for external monitoring.

F. Summary of Risk Assessment and Risk Management Plan

34. The risk assessment of the overall project is *medium*, and the benefits and impacts are expected to outweigh the costs. The risks, which were rated either low or moderate, and the mitigation measures are described in detail in the risk assessment and risk management plan.³⁴

IV. ASSURANCES AND CONDITIONS

35. The government and the NPMO have assured ADB that the implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents. The government and the NPMO have agreed with ADB on certain covenants for the project, which are set forth in the loan and project agreements. Additionally, no withdrawal from the ADB loan account will be made for any civil works until confirmation is obtained from the government in a manner satisfactory to ADB that the relevant beneficiaries have committed to providing their in-kind contributions.

V. RECOMMENDATION

36. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$300,000,000 to the People's Republic of China for the Yangtze River Green Ecological Corridor Comprehensive Agriculture Development Project, from ADB's ordinary capital resources, in regular terms, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

17 October 2018

³⁴ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with Environmental protection, rehabilitation, and management of the Yangtze River improved (Yangtze River Economic Belt Development Plan, 2016–2030) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>Outcome Sustainability and modernity of agricultural production systems in participating project watersheds increased</p>	<p>By mid of 2025 within the project counties: a. 115,000 ha of farmland with improved practices (2018 baseline: 0 ha)^b b. Use of chemical pesticide reduced by 17% (2018 baseline: 383.9 tons/year) c. Use of chemical fertilizer reduced by 15% (2018 baseline: 41,499 tons/year)</p>	<p>a. Farmer surveys a–c. Provincial and local governments' annual statistics report a–c. Project progress reports</p>	<p>A reduction in prices for agricultural chemicals below the projected amount discourages the farmers from adopting sustainable farming technology and practices.</p>
<p>Outputs</p> <p>1. Modern farming systems constructed</p> <p>2. Waste and environmental management systems strengthened</p>	<p>By mid of 2024 within the project counties: 1a. At least 3,535 small-scale water collection and storage facilities constructed or rehabilitated (2018 baseline: 0) 1b. Water-saving irrigation technology facilities established on 2,700 ha (2018 baseline: 0 ha) 1c. Irrigation and drainage infrastructure constructed to service at least 32,900 ha of farmland (2018 baseline: 0 ha) 1d. At least 1,610 km of new and improved farm access and tractor roads built (2018 baseline: 0 km) 1e. Climate-resilient crop and land management practices established on 13,711 ha (2018 baseline: 0 ha) 1f. 30% of jobs in construction and operation of modern farming systems reserved for women; and 40% of jobs in works related to farmer cooperatives reserved for women (2018 baselines: 0%, 0%) 2a. At least 600 m³ farming waste collection facilities commissioned (2018 baseline: 0 m³)</p>	<p>1a–1f. Project progress and completion reports, and loan review missions</p> <p>2a–2g. Project progress and completion reports, and loan review missions</p>	<p>The commitment of administration agencies to cooperate and coordinate efforts to link environmental protection and agriculture development weakens because priorities change.</p> <p>Increased domestic demand for skilled staff beyond projections leads to large turnover.</p>

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p>3. Institutional, technical, and management capacity and coordination strengthened</p>	<p>2b. At least 21,400 m³ for animal and 20,308 m³ for household waste treatment facilities commissioned (2018 baseline: 0 m³)</p> <p>2c. At least 31 sets of watershed pollution monitoring equipment commissioned (2018 baseline: 0)</p> <p>2d. At least 25,193 sets of integrated pest management materials and equipment commissioned (2018 baseline: 0)</p> <p>2e. At least 11,000 ha of land reforested for ecological protection (2018 baseline: 0 ha)</p> <p>2f. At least 20,400 ha of economic trees planted, and 2,750 ha replanted (2018 baselines: 0 ha, 0 ha)</p> <p>2g. At least 950 km of riverbank, lakeside, dyke, and farm roadside protection and upgrades completed (2018 baseline: 0 km)</p> <p>3a. At least 1,450 pm of training on technical and management issues conducted for local authorities, of which at least 30% are women (2018 baselines: 0 pm, 0%)</p> <p>3b. At least 2,465 pm of training on improved farming and technologies provided to members of farmer cooperatives, of which at least 40% are women (2018 baselines: 0 pm, 0%)</p> <p>3c. At least 3,237 pm of training on improved farming skills and technologies conducted for farmers, of which at least 40% are women (2018 baselines: 0 pm, 0%)</p>	<p>3a–3d. Project progress and completion reports, and loan review missions</p> <p>3a–3c. Post training survey of participants</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks								
	3d. At least 10 research projects related to modern farming, pollution control or environmental protection submitted to the NPMO (2018 baseline: 0)										
Key Activities with Milestones											
<p>1. Modern farming systems constructed</p> <p>1.1 Prepare preliminary and detailed designs (Q1 2019–Q2 2023).</p> <p>1.2 Procure civil works and goods (Q1 2019–Q4 2023).</p> <p>1.3 Implement civil works for farmland improvement and development (Q2 2019–Q2 2024).</p> <p>1.4 Install water collection, storage, and irrigation equipment (Q2 2019–Q2 2024).</p> <p>2. Waste and environmental management systems strengthened</p> <p>2.1 Prepare preliminary and detailed designs (Q1 2019–Q2 2023).</p> <p>2.2 Procure civil works and equipment (Q1 2019–Q4 2023).</p> <p>2.3 Implement civil works for livestock and farm waste management (Q2 2019–Q2 2024).</p> <p>2.4 Implement watershed protection through reforestation and afforestation (Q2 2019–Q2 2024).</p> <p>3. Institutional, technical, and management capacity and coordination strengthened</p> <p>3.1 Assess capacity demands and prepare a detailed training program (Q2 2019–Q4 2023).</p> <p>3.2 Provide support for policy review, development, and implementation (Q2 2019–Q2 2024).</p> <p>3.3 Train relevant provincial and local government officials (Q2 2019–Q2 2024).</p> <p>3.4 Train farmers on new technology, pollution prevention, and environmental protection (Q2 2019–Q2 2024).</p> <p>3.5 Implement technical assistance and research projects (Q2 2019–Q2 2024).</p>											
Project Management Activities											
<p>Recruit project implementation consultants (Q1 2019)</p> <p>Conduct training sessions on project management (Q2 2019–Q2 2024)</p> <p>Establish the PPMS, submit semiannual project progress reports and project completion report to ADB (Q2 2019–Q4 2024)</p> <p>Implement the EMDP, EMP, GAP, LURT framework, and SDAP; submit semiannual social safeguard and annual environmental safeguard monitoring reports to ADB (Q2 2019–Q3 2024)</p>											
Inputs											
<table> <tr> <td>ADB (loan):</td> <td>\$300.0 million</td> </tr> <tr> <td>Central government:</td> <td>\$ 18.6 million</td> </tr> <tr> <td>Provincial and county governments:</td> <td>\$155.0 million</td> </tr> <tr> <td>Beneficiaries:</td> <td>\$ 33.1 million</td> </tr> </table>				ADB (loan):	\$300.0 million	Central government:	\$ 18.6 million	Provincial and county governments:	\$155.0 million	Beneficiaries:	\$ 33.1 million
ADB (loan):	\$300.0 million										
Central government:	\$ 18.6 million										
Provincial and county governments:	\$155.0 million										
Beneficiaries:	\$ 33.1 million										
Assumptions for Partner Financing											
Not applicable											

ADB = Asian Development Bank, EMDP = ethnic minority development plan, EMP = environmental management plan, GAP = gender action plan, ha = hectare, km = kilometer, LURT = land use rights transfer, m³ = cubic meter, NPMO = national project management office, pm = person-months, PPMS = project performance management system, Q = quarter, SDAP = social development action plan.

^a Government of the People's Republic of China. 2016. *Outline of the Yangtze River Economic Belt Development Plan, 2016–2030*. Beijing.

^b Improved practices include efficient water use for irrigation, farmland protection (land leveling and terracing), soil conditioning, conservation tillage, use of balanced fertilizer rates, and integrated pest management.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=51116-002-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Agriculture, Natural Resources, and Rural Development
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Risk Assessment and Risk Management Plan
12. Climate Change Risk Assessment (Summary)
13. Gender Action Plan
14. Initial Environmental Examination
15. Indigenous Peoples Plan: Ethnic Minority Development Plan

Supplementary Documents

16. Due Diligence Report on Land Use Rights Transfer and Land Acquisition and Resettlement
17. Procurement Risk Assessment
18. Financial Management Assessment
19. Climate Risk and Vulnerability Assessment
20. Economic Analysis—Methods and Assumptions