



Project Administration Manual

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People's Republic of China: Henan Sustainable Livestock Farming and Product Safety Demonstration Project

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People's Republic of China: Henan Sustainable
Livestock Farming and Product Safety Demonstration
Project

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the government's and the Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Henan provincial government (HPG), the project executing agency; and the implementing agencies, including Henan Provincial Department of Agriculture and Rural Affairs (HDARA) and the eight project participating enterprises (PPE) are wholly responsible for the implementation of the ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the government's and ADB policies and procedures. The ADB staff is responsible to support implementation, including compliance by HPG, HDARA, and the eight PPEs of their obligations and responsibilities for project implementation in accordance with ADB policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan agreement. Such agreement shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction the PAM and the loan agreement, the provisions of the loan agreement shall prevail.

After ADB Board approval of the project's report and recommendations of the President, changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the project administration instructions); and upon such approval, they will be subsequently incorporated in the PAM.

CURRENCY EQUIVALENTS
(as of July 2019)

Currency unit	–	yuan (CNY)
CNY1.00	=	\$0.1448
\$1.00	=	CNY6.9061

ABBREVIATIONS

ADB	=	Asian Development Bank
AFS	=	audited financial statements
DMF	=	design and monitoring framework
EIA	=	environmental impact assessment
EIRR	=	economic internal rate of return
EMP	=	environmental management plan
EPB	=	environmental protection bureau
FECC	=	Foreign Economic Cooperation Center
GAP	=	gender action plan
HDARA	=	Henan Provincial Department of Agriculture and Rural Affairs
MARAB	=	Municipal Agriculture and Rural Affairs Bureau
CARAB	=	County Agriculture and Rural Affairs Bureau
HAHB	=	Henan Animal Husbandry Bureau
HLPQMIC	=	Henan Livestock Product Quality Monitoring and Inspection Center
MLPQMIC	=	Municipal Livestock Product Quality Monitoring and Inspection Center
CLPQMIC	=	County Livestock Product Quality Monitoring and Inspection Center
HDRC	=	Henan Development and Reform Commission
HEPD	=	Henan Environmental Protection Department
HFD	=	Henan Finance Department
HPAO	=	Henan Poverty Alleviation Office
HPG	=	Henan Provincial Government
ICB	=	international competitive bidding
IEE	=	initial environmental examination
FIRR	=	financial internal rate of return
FMA	=	financial management assessment
GRM	=	grievance redress mechanism
LIBOR	=	London interbank offered rate
NCB	=	national competitive bidding
PAM	=	project administration manual

PIC	=	project implementation consultant
PMO	=	project management office
PPE	=	project participating enterprise
PPMS	=	project performance monitoring system
PPTA	=	project preparatory technical assistance
PRC	=	People's Republic of China
SOE	=	statement of expenditure
SPS	=	Safeguard Policy Statement

I. PROJECT DESCRIPTION

1. The Henan Sustainable Livestock Farming and Product Safety Demonstration Project aims to demonstrate model livestock production and processing with improved environmental sustainability and product safety in eleven project counties/districts in Henan Province.¹ The project will help (i) the Henan Provincial Government (HPG) upgrade livestock product safety monitoring and inspection facilities; and (ii) eight medium- and large-sized private livestock production and/or processing enterprises, or project participating enterprises (PPEs),² improve food safety control and implement environmentally sustainable livestock production and processing.³ Henan is suitable for the demonstration given the province's strategic importance in food security and agriculture in the People's Republic of China (PRC).

A. Rationale

2. Henan Province covers a large part of the fertile North China Plain, with a population of 104.89 million; 62.34 million people (59.4%) live in rural areas, where the poverty rate is 13.1%. Agriculture has traditionally been an important part of Henan Province's economy, contributing 12.7% of the provincial gross domestic product and 41.8% of the total labor force in 2012. Henan Province is also known for its significant contribution to national food security, with the PRC's highest output of wheat, second-highest output of rice, and second-highest livestock production in value in 2012.

3. With the economic growth and increasing household incomes, consumption of animal protein-based food, particularly meat products, has also increased in the PRC. During 1978–2012, per capita meat consumption doubled in urban and more than tripled in rural areas,⁴ with further growth in consumption expected. Food safety awareness is rising, and consumers are demanding properly processed meat products with adequate labeling. Livestock sector

¹ The eleven project counties/districts comprise (i) Gushi County of Xinyang City, (ii) Liangyuan District of Shangqiu City, (iii) Luoning County of Luoyang City, (iv)–(v) Neixiang and Sheqi counties of Nanyang City, (vi) Shanzhou District of Sanmenxia City, (vii)–(viii) Jian'an District and Yanling County of Xuchang City, (ix) Zhengyang County of Zhumadian City, (x) Shenqiu County of Zhoukou City, and (xi) Gongyi county of Zhengzhou City.

² Those PPEs were selected based on criteria chosen by HPG. The selection criteria and process are summarized in Annex 4 of this project administration manual. The eight PPEs comprise (i) six pig farming enterprises (Dadi, Fenghua, Muyuan, Muyuan Meat, Sheqi Muyuan and Yongxin), three (Fenghua, Muyuan and Muyuan Meat) of which have processing capacity; (ii) one cattle farming enterprise (Hengtianran); and (iii) one poultry farming enterprise (Sangao) with processing capacity.

³ The Asian Development Bank (ADB) provided project preparatory technical assistance for the Henan Value Chain and Products Safety Demonstration Project (TA 8352-PRC).

⁴ G. Zhou, et al. 2012. China's meat industry revolution: Challenges and opportunities for the future. *Meat Science*. 92 (3), pp.188–196. Elsevier.

development in the PRC is necessitated by fast-growing domestic demand for high-quality meat products that are trusted by food safety-conscious consumers.

4. The Government of the PRC faces tremendous pressure in ensuring sufficient supply of high-quality meat products to meet the domestic demand; this is complicated by increasingly challenging resource constraints, including a decline in the active rural labor force; and degradation and reduction in the quantity of arable land and water. The national government proposes to address these challenges by upgrading to intensive and modernized livestock production and processing systems; but this faces two major challenges: (i) ensuring the safety of livestock and meat products, and (ii) addressing pollution from livestock waste.

5. During the Twelfth Five-Year Plan period (2011–2015), the national government has made significant progress in food safety management to control recurrent food safety incidents—by increasing cohesion in government food safety supervision, unifying food safety standards, and increasing noncompliance penalties.⁵ The national government issued the first comprehensive Food Safety Law (FSL) in 2009, which is being further revised. The FSL and relevant regulations stipulate that (i) local governments have overall responsibility for the supervision and management of food safety in their jurisdiction; and (ii) food producers and traders are responsible for strict compliance with the FSL, relevant regulations, and food safety standards.

6. Although HPG has been upgrading its food safety infrastructure, procedures, and enforcement capacity, the substantial improvements needed for full compliance with the strengthened food safety regulations have yet to be made. Provincial governments are required to improve hazard risk assessment as part of their existing monitoring and inspection responsibility, while lower-level government administrations are required to be equipped with rapid screening and testing capacity to enhance their sampling and inspection efficiency. Food producers, particularly agro-enterprises, are required to have adequate quality control and self-testing capacity. As a major food producer for the PRC, Henan Province needs to further improve food safety management—particularly of meat and other livestock products—undertaken by HPG, local governments, and food producers, which poses challenges because of the complex supply chain.

7. The expansion of the intensive livestock production has significant negative environmental impacts. The waste produced by the livestock farms and enterprises contains high concentrations of pollutants, and is often discharged without proper treatment, resulting in serious land and water pollution; and threats to public safety. In 2010, only 36.5% of the large-scale livestock farms in Henan Province met the PRC's environmental standards for waste discharge and control.⁶ Livestock waste also produces significant greenhouse gas emissions. The national government has promoted production of renewable energy using livestock waste, particularly for medium- and large-scale livestock farms and enterprises; but many lack proper waste treatment facilities. The reluctance of livestock enterprises to invest in waste treatment facilities and the national government's weak enforcement of environmental laws makes it difficult to address this negative environmental impact.

8. As the PRC's major livestock producer, Henan Province is expected to help demonstrate model livestock production and processing intensification and modernization systems. The project

⁵ S. McDonald. 2008. Nearly 53,000 Chinese children sick from milk. Associated Press. Melanin-adulterated powdered milk caused over 50,000 babies to be hospitalized and killed six.

⁶ Henan Provincial Livestock Bureau, Henan Provincial Agriculture Department, Henan Provincial Environmental Protection Department. 2012. Guiding Opinions on Further Strengthening Control of Discharge of Animal Wastes [N/OL]. 24 March 2012. <http://www.hnvm.gov.cn>.

supports the long-term goal of building a harmonious and moderately prosperous society through livelihood improvement, and regionally balanced and environmentally sustainable growth in the PRC's Twelfth Five-Year Plan (2011–2015).⁷ It also supports the national government's renewed commitment to food safety system improvement and sustainable environmental and natural resources management in the third plenum of the Eighteenth Communist Party of China Central Committee (2013), which will guide the Thirteenth Five-Year Plan (2016–2020).⁸ The project is aligned with the country partnership strategy, 2011–2015 for the PRC of the Asian Development Bank (ADB) that supports the national government's overarching strategic goal by focusing on inclusive and environmentally sustainable growth;⁹ and the ADB operational plan for agriculture and natural resources, which promotes increased productivity and resource efficiency, agribusiness development, and enhanced food safety and quality.

9. The project will also complement ADB's technical assistance on National Food Safety Regulatory and Strategic Framework and build upon lessons learned from previous projects in Henan Province, which include the effectiveness of medium-term financing for agro-enterprises and farmers, cooperation mechanisms between agro-enterprises and farmers, and the importance of capacity building.¹⁰ A project loan is the proposed financing modality.

B. Impact and Outcome

10 The impact will be (i) upgraded agricultural industrialization and large-scale operation, (ii) enhanced capacity in ensuring agro-product quality and safety, and (iii) strengthened conservation of agricultural resources and ecosystems. The outcome will be demonstration of model livestock production and processing with improved environmental sustainability and product safety.

C. Outputs

11 The outputs will be (i) upgraded livestock product safety monitoring and inspection facilities, (ii) establishment of environmentally sustainable livestock production facilities, and (iii) strengthened capacity and project management.

12. **Output 1: Upgraded livestock product safety monitoring and inspection facilities.** This output will support HPG's effort to improve the livestock and feed product safety monitoring and inspection system by (i) helping to upgrade and/or establish laboratories and provide testing equipment for the Livestock Product Quality and Safety Monitoring and Inspection Center of the Henan Animal Husbandry Bureau (HAHB)¹¹, five project municipal animal husbandry bureaus

⁷ Government of the People's Republic of China, National People's Congress. 2011. Outline of the Twelfth Five-Year Plan of the People's Republic of China, 2011–2015. Beijing.

⁸ Government of the People's Republic of China. 2013. *Communist Party of China Central Committee Resolution Concerning Some Major Issues in Comprehensively Deepening Reform*. Beijing.

⁹ ADB. 2012. *Country Partnership Strategy: People's Republic of China, 2011–2015*. Manila.

¹⁰ ADB. 2007. Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant for the Henan Sustainable Agriculture and Productivity Improvement Project in the People's Republic of China. Manila; ADB. 2004. Technical Assistance to the People's Republic of China for the National Food Safety Regulatory and Strategic Framework. Manila; and ADB. 2000. Report and Recommendation of the President to the Board of Directors: Proposed Loan for the West Henan Agricultural Development Project in the People's Republic of China. Manila.

¹¹ In October 25, 2018, due to institute reform, Henan Animal Husbandry Bureau (HAHB) and Henan Department of Agriculture (HAD) has been merged and founded Henan Provincial Department of Agriculture and Rural Affairs (HDARA). The duties of HAD has been succeeded by HDARA, and meanwhile the implementing agency HAHB has been revised into HDARA, who will carry out subproject construction contents, duties and obligations of HAHB.

(MAHBs),¹² and nine project county/district animal husbandry bureaus (CAHBs);¹³ (ii) helping PPEs upgrade and/or establish in-house testing facilities for livestock and feed products; and (iii) providing information technology equipment and software for HAHB, MAHBs, CAHBs, and the PPEs to establish a laboratory information management system, which will complement the comprehensive livestock information platform and traceability system being financed by HPG. This output, together with relevant training activities of output 3, will help HPG strengthen its institutional capacity for livestock and feed product safety monitoring and inspection; and enforcement of relevant regulations.

13. Output 2: Establishment of environmentally sustainable livestock production facilities. This output will promote environmental sustainability and energy conservation in livestock production and processing. The project will help the PPEs establish (i) livestock production and meat processing facilities; (ii) feed processing facilities; and (iii) in-house animal waste and wastewater treatment and/or processing facilities, including biogas generators and organic fertilizer processing facilities. These facilities will be equipped with energy- and water-saving technologies. The output is expected to generate significant environmental benefits, including avoided greenhouse gas emissions; and employment and income-generating opportunities at the PPEs for local people and farmers who supply livestock, raw materials, and other inputs to the PPEs, and/or receive organic fertilizer from the PPEs.

14. Output 3: Strengthened capacity and project management. This output will comprise capacity-development activities and project management. The project will provide (i) training on livestock product safety for the HAHB, MAHBs, CAHBs, and PPEs; (ii) training on environmentally sustainable livestock production and processing for the PPEs and associated farmers from which the PPEs source their livestock;¹⁴ (iii) training on project management for project management offices (PMOs) of six project municipal governments and eleven county/district governments¹⁵, HAHB, the PPEs, and other relevant government agencies; and (iv) oversea and domestic study

Henan Livestock Product Quality Monitoring and Inspection Center (HLPQMIC) under HDARA is responsible for the subproject implementation, and the fixed assets transferred from this subproject belongs to HDARA, and the loan will be repaid by HDARA. During implementation of the subproject, contracts signed by the HAHB, invoices and other related documents and materials of HAHB will continue to be valid. From February 1, 2021, the subsequent contract signing, withdrawal and accounting, training and study tours, inspection and audit, and completion acceptance of the subproject will be handled by HDARA. The responsibilities of the PPMO will continue to be undertaken by the Foreign Economic Cooperation Center (FECC) of HDARA. One of the original implementation agencies, the HAHB, was changed to Henan Livestock Product Quality Monitoring and Inspection Center (HLPQMIC) of HDARA, referred to as provincial quality inspection center. Accordingly, the Municipal/County Animal Husbandry Bureau (AHB) was changed to Municipal/County Livestock Product Quality Monitoring and Inspection Center of (LPQMIC) of municipal/county Agriculture and Rural Affairs Bureau (ARAB), referred to as municipal/county quality inspection center.

¹² The five municipalities comprise Luoyang, Nanyang, Sanmenxia, Shangqiu, and Xuchang.

¹³ Nine CAHBs include (i) Shanzhou District, Sanmenxia City; (ii) Zhengyang County, Zhumadian City; (iii)-(iv) Yanling County and Jian'an District, Xuchang City; (v) Neixiang County, Nanyang City; (vi) Gushi County, Xinyang City; (vii) Shenqiu County, Zhoukou City; (viii) Liangyuan District, Shangqiu City; (x) Luoning County, Luoyang City.

¹⁴ The areas to be covered by the training include market-based production system certification standards (e.g., hazard analysis and critical control point and China Good Agricultural Practices); animal welfare; biosecurity, including animal disease control; and waste management. Further details are included in Annex 1 of this project administration manual (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

¹⁵ After the adjustment of the sub-project in July 2018, 7 counties in which the sub-project enterprises are located, including (i) Shanzhou District, Sanmenxia City; (ii) Zhengyang County, Zhumadian City; (iii) Jian'an District, Xuchang City; (iv)-(v) Neixiang County and Sheqi County, Nanyang City; (vi) Gushi County, Xinyang City; (vii) Shenqiu County, Zhoukou City. Additionally, there are four counties/districts in the original quality inspection system, including (viii) Yanling County, Xuchang City; (ix) Liangyuan District, Shangqiu City; (x) Luoning County, Luoyang City and (xi) Gongyi County, Zhengzhou City.

tours and training.¹⁶ Under this output, the project will help the PPEs establish hazard analysis and critical control point (HACCP) and/or HACCP-based food quality control systems, such as the China Good Agricultural Practices. The training will also cover animal welfare and health, such as appropriate use of animal medicines as part of International Organization for Standardization (ISO) 9001 requirements. The project will also provide office equipment for project management. A project implementation consultant team, which will be financed by HPG, will assist (i) the provincial PMO in managing project implementation and organizing training on project management and environmentally sustainable livestock production and processing; and (ii) HAHB in organizing training on livestock product safety. Training of trainers will be introduced to maximize the impact of capacity development.

15. Multilevel approach to food safety control. One of the two key project features is a multilevel approach to food safety control: (i) under output 1, the project will assist three administrative levels (HAHB, MAHBs, and CAHBs) of food safety regulators and producers (PPEs) in upgrading their quality-testing capacity to meet the PRC's food safety regulations. The strengthened food safety control will not only improve the safety of livestock products; but also the safety of feed; (ii) under output 3, the project will provide capacity building to help the PPEs adopt HACCP and/or HACCP-based food quality control systems; and (iii) under output 1, the project will help establish a laboratory information management system through which HAHB will access livestock product quality-testing results provided by the PPEs. The resultant livestock product safety monitoring and inspection system is expected to enable the food safety regulators to monitor the PPEs' up-to-date information on livestock and its products to mitigate the risk of distribution of contaminated food and animal disease outbreaks. Establishment of the system is an important element in HPG's efforts to build a traceability system for livestock products. The resulting food safety improvements will benefit a number of consumers.

16. Environmentally sustainable livestock production. A second key project feature is the demonstration of environmentally sustainable livestock production and processing. For sustainable sector growth, environmental impacts need to be mitigated as much as possible through efficient resource use. Despite their significant production activities, most PPEs still rely on conventional waste management, involving the drying of waste and its application to crops. This project will help all PPEs invest in facilities to enable proper waste treatment. Six PPEs (DD, HTR, MY, YX, SQMY, SG) will process solid waste for organic fertilizer, while four PPEs (DD, MY, YX, SQMY) will process liquid waste through biogas digesters to generate gas for power generation and residues for organic fertilizer. As a result, the project is expected to avoid more than 1,313 tons per year of carbon dioxide equivalent greenhouse gas emissions; and provide 41,000 tons per year of organic fertilizer. Six PPEs will use part of the organic fertilizer to grow feed and other crops which will promote feed safety and environmental sustainability in feed material production at the PPEs and elsewhere. Although production of feed materials that are sourced by PPEs from markets are beyond the project scope, the PPEs will be encouraged to use certified feed with quality assurance standards, such as the China Good Agricultural Practices, to promote food safety.

17. The project will also establish a mechanism to monitor and promote water- and energy-saving technologies through an environmental sustainability monitoring program, which was developed and pilot-tested by the PMO and the PPEs during project preparation and will be implemented under the project.¹⁷ The program will record quarterly water and energy use in new

¹⁶ A list of training planned under the project is provided in Annex 1 of this project administration manual (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

¹⁷ The program is described in section E of the initial environmental examination and in section VIII of this project

and existing PPE facilities of the same livestock type and in the same counties. The program is anticipated to enable the PPEs to increase efficiency, which may have financial and environmental benefits. An added value is the inclusion of existing facilities and expansion of the program's benefits beyond the project. This appears to be among the first long-term monitoring programs for water and energy use by agricultural enterprises in Henan Province.

Table I.1: Summary of Project Activities

No	Enterprise	Activities		Added Capacity	Main Equipment and Installations
		Present	New		
	(1)	(2)	(3)	(4)	(5)
1	Henan Provincial Department of Agriculture and Rural Affairs (HDARA)	Provincial DARA: 1. Research on policy and technology of inspection and standards for livestock product quality and safety 2. Risk analysis of livestock product quality and safety 3. Supervision of veterinary drugs and feed quality	Provincial DARA: 1. Research on policy and technology of inspection and standards for livestock product quality and safety 2. Risk analysis of livestock product quality and safety 3. Supervision of veterinary drugs and feed quality 4. Monitoring and inspection information management	1. Analysis and research on identification, monitoring, risk analysis and early warning on hazard factors: (i) Increased quantity and speed of sample preparation and testing; (ii) Increased numbers of tested hazard factors; (iii) Increased testing accuracy, selectivity, and sensitivity 2. Safety factor testing for livestock-raising environment 3. Information management and sharing	1. Reconstruction of laboratories (1,600 m ²) 2. Reconstruction of ventilation system and maintenance of tables and shelves (4,000 m ²) 3. Laboratory equipment for sample preparation and testing with high sensitivity, and rapid and high- handling capacity, including degeneration HPLC, LC-MS, and automatic microorganism identification system 4. Vehicle for sample collection, computers and software
	Henan Provincial Department of Agriculture and Rural Affairs (HDARA)	5 Municipal ARABs: Assisting the provincial AHB in random sampling and supervision of livestock product and inputs (veterinary drugs and feed) quality and safety	5 Municipal ARABs: 1. Assisting the provincial AHB in random sampling and supervision of livestock product and inputs (veterinary drugs and feed) quality and safety. 2. Monitoring and inspection information management	1. Expansion of inspection scope and handling capacity: (i) Increased quantity and speed of sample preparation and testing (ii) increased numbers of tested indicators (iii) Increased testing accuracy, selectivity, and sensitivity 2. Testing and monitoring key risk factors required for regular inspection 3. Information management and sharing	1. Improvement of existing ventilation system, wastewater, and solid waste treatment facilities (190 m ²) 2. Laboratory equipment to rapidly deal with large number of samples, including LC-MS, LC, atomic absorption spectrophotometer and precision pre-treatment equipment 3. Vehicle for sample collection 4. Computers and software
	Henan Provincial Department of Agriculture and Rural Affairs (HDARA)	9 County ARABs: 1. On site rapid testing 2. Only one county AHB equipped with laboratory devices and certified with metrological accreditation	9 County ARABs: 1. On site rapid testing 2. Laboratory 3. Monitoring and inspection information management	1. Laboratory tests for major livestock products 2. Rapid qualitative testing on site 3. Information management and sharing	1. Unified facilities for establishing a standard laboratory, including equipment for sample storage and preparation, laboratory tools, and ELISA 2. Vehicle for sample collection and rapid testing 3. Computers and software

No	Enterprise	Activities		Added Capacity	Main Equipment and Installations
		Present	New		
	(1)	(2)	(3)	(4)	(5)
2	Henan Dadi Animal Husbandry Co., Ltd. (DD)	<ol style="list-style-type: none"> 1. Pig farm (14,000 pigs' annual inventory) 2. Old biogas plant 	<ol style="list-style-type: none"> 1. All in-all out farrow-finished pig system 2. Pig farm 3. Upgraded animal health, welfare, and biosecurity 4. Biogas plant 5. Organic fertilizer plant 6. Product monitoring and inspection system 	<ol style="list-style-type: none"> 1. New pig farm with annual production of 80,000 heads 2. An organic fertilizer processing plant with annual output of 8,000 tons 3. One biogas plant with two digesters at 800 m³ capacity each 4. Product monitoring and inspection system 	<ol style="list-style-type: none"> 1. Pig finishing unit with modern feeding/watering 2. Climate/ventilation control system 3. Energy-saving boiler 4. 2 x 800 m³ UASB digesters 5. 60 kWh bio-generator
3	Henan Fenghua Breeding Share Co., Ltd. (FH)	<ol style="list-style-type: none"> 1. Pig sow, farrowing and finishing farms (100,000 pigs per year) 2. Feed mill (180,000 tons per year) 3. Slaughter/processing units (300,000 pigs per year) 4. Biogas production 5. Organic fertilizer production 	<ol style="list-style-type: none"> 1. Pig slaughter and product processing 2. Cold store 3. Upgraded animal health, welfare, and biosecurity 4. Product monitoring and inspection system 	<ol style="list-style-type: none"> 1. Pig slaughtering house with annual slaughter capacity of 500,000 heads 2. Cold storage for 35,000 tons/year of fresh meat 3. Products monitoring and inspection system 	<ol style="list-style-type: none"> 1. Pig slaughter equipment and buildings 2. Cold store equipment and building 3. Waste treatment facility comprising (i) pre-treatment system, (ii) mixing tank, (iii) hydrolysis/ acidification pond, (iv) A/O tank, (v) sludge treatment and sediment filtration systems
4	Henan Hengtianran Pasture Farming Co., Ltd. (HTR)	<ol style="list-style-type: none"> 1. Dairy farm with 800 milking cows annual inventory 2. Beef farm with 300 cows annual inventory 	<ol style="list-style-type: none"> 1. Cattle fattening farm 2. Upgraded animal health, welfare, and biosecurity 3. Manure treatment facility 4. Organic fertilizer processing plant 5. Product monitoring and inspection system 	<ol style="list-style-type: none"> 1. Cattle fattening farm with annual inventory of 4,000 heads 2. An organic fertilizer processing plant with annual output of 7,000 tons 3. Product quality and safety system 	<ol style="list-style-type: none"> 1. Breeding equipment 2. Manure treatment facilities including: 20,000m³ sewage sedimentation tank, 5000 m³ regulating tank, 2,000 fecal sewage yards; 3. Organic fertilizer processing facilities 4. Mechanical transportation equipment
5	Muyuan Foodstuff Co., Ltd. (MY)	<ol style="list-style-type: none"> 1. Pig sow, farrowing and finishing farms (11 million pigs/year) 2. Feed mills 3. Slaughter/processing units (1 million pigs per year) 4. Biogas production 	<ol style="list-style-type: none"> 1. Sow breeding farm 2. Pig finishing farms 3. Upgraded animal health, welfare, and biosecurity 4. Five new biogas plants 5. New organic fertilizer processing plant 	<ol style="list-style-type: none"> 1. Sow breeding base with inventory of 10,000 heads 2. Hog farm with annual output of 50,000 heads 3. One biogas plant in the sow base with two digesters at 800 m³ each 4. One biogas plant in the hog 	<ol style="list-style-type: none"> 1. Sow breeding and pig finishing units with modern feeding and watering 2. 2 x 800 m³ USAB digesters 3. 1 x 1000 m³ USAB digester 4. 60 kWh bio-generator 5. 30,000 m³ oxidation pond

No	Enterprise	Activities		Added Capacity	Main Equipment and Installations
		Present	New		
	(1)	(2)	(3)	(4)	(5)
		5. Organic fertilizer production 6. Product testing and basic traceability system	6. Product monitoring and inspection system	farm with one digester at 1,000 m ³ capacity 5. Two organic fertilizer processing plants at annual output capacity of 6,000 tons each 6. Product monitoring and inspection system	
6	Henan Muyuan Meat Food Co., Ltd. (MYM)	None. (newly established enterprise)	1. Quality and safety system 2. Slaughtering line 3. Sewage treatment facilities	1. One new pig slaughtering and processing plant with slaughtered 2 million pigs per year; 2. 158,400 tons fresh meat refrigeration facilities.; 3. One supporting sewage treatment plant with a design daily treatment capacity of 3000 tons.	1. Sewage treatment equipment 2. Slaughtering traceability system 3. Cold storage equipment facilities 4. Automatic stereoscopic storage equipment
7	Henan Sangao Agriculture and Animal Husbandry Co., Ltd. (SG)	1. Hatchery unit (33 million chicks per year) 2. Three breeding farms (280,000 birds) 3. Layer units (5 million eggs per year) 4. Organic fertilizer production 5. Feed mill (80,000 tons per year) 6. Product testing and basic traceability system	1. Chicken breeding farm 2. Feed mill plant 3. Upgraded animal health, welfare, and biosecurity 4. Manure treatment facility 5. Integrated information and GIS system	1. New chicken breeding farm with annual inventory of 200,000 chick breeders 2. An organic fertilizer processing plant with annual output of 200,000 tons 3. New feed processing plant with capacity of 5,000 tons 4. Product monitoring and inspection system	1. New hatchery equipment and buildings 2. Feed mill equipment and building 3. Organic fertilizer equipment 4. Underground sedimentation tank
8	Sheqi Muyuan Livestock Co., Ltd. (SQMY)	1. Two farms built and put into production 2. Production capacity of about 250000 pigs per year	1. Fattening pig farm; 2. Animal product quality and safety system; 3. Fecal treatment facilities	1. One new fattening pig farm with annual production of 100,000 heads, 2. Inspection system, comprehensive information and traceability system 3. One organic fertilizer processing plant with an	1. Quality and safety equipment 2. Breeding equipment 3. Biogas equipment and organic fertilizer equipment 4. One 800 m ³ UASB reaction tank

No	Enterprise	Activities		Added Capacity	Main Equipment and Installations
		Present	New		
	(1)	(2)	(3)	(4)	(5)
9	Zhoukou Yongxin Feed Co., Ltd. (YX)	1. Feed processing plant (50,000 tons / year) 2. Two pig sow farms and one finishing farm with 30000 heads/year	1. Livestock breeding base 2. Animal product quality and safety system 3. Fecal treatment facilities	annual output of 12,000 tons. 1. One new pig sow farm with 3000 heads 2. Two biogas tanks with a capacity of 2,000 m ³ ; 3. An organic fertilizer processing plant with an annual output of 3000 tons 4. Product monitoring and inspection system	1. Quality and safety equipment 2. Breeding equipment 3. One 2000 m ³ UASB reaction tank 4. One 200KW biological generator

AHB = animal husbandry bureau, kWh = kilowatt hour, m² = square meter, m³ = cubic meter, TMR = total mixed ration, UASB = upflow anaerobic sludge blanket, A/O = anoxic/oxic, ELISA = enzyme-linked immuno sorbent assay, HPLC = high-performance liquid chromatography, LC = liquid chromatography, LC-MS = liquid chromatography-mass spectrometry, MBR = membrane biological reactor, p.d. = per day

Source: Asian Development Bank.

II. IMPLEMENTATION PLANS

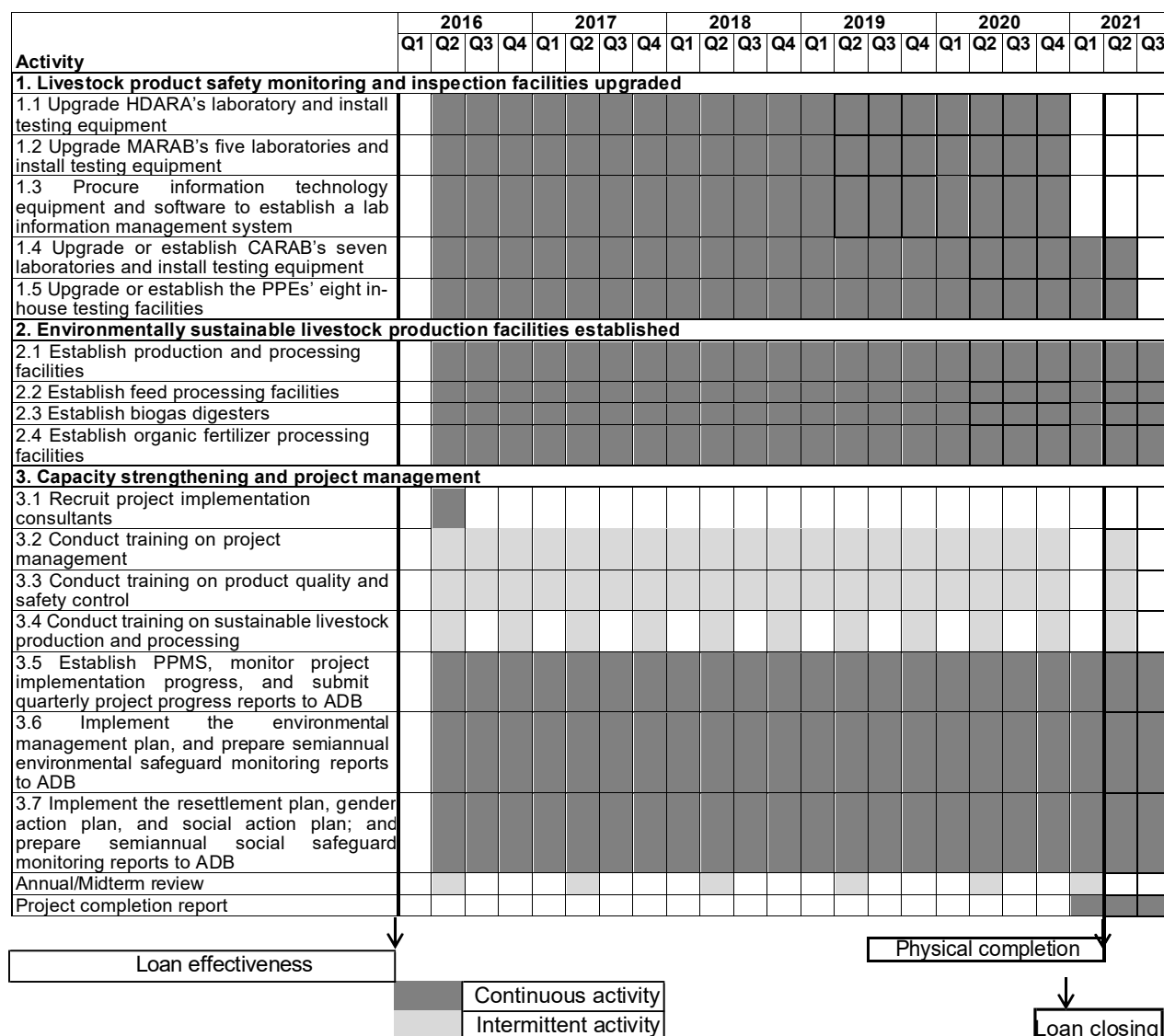
A. Project Readiness Activities

Indicative Activities	2015									2016			Responsibility
	Q2			Q3			Q4			Q1			
Approval of domestic FSRs													HDRC, PMO, Implementing agencies
Selection of procurement agencies													PMO
Advance contracting actions													PMO, Procurement agencies, ADB
Retroactive financing actions													PMO, Procurement agencies, ADB
Loan negotiations													MOF, HPG, ADB
ADB Board approval													ADB
Government budget inclusion													HPG
Loan signing													MOF, HPG, and ADB
Finalization of onlending agreements													MOF, HFD, MFB, CFB, and PPEs
Government legal opinion provided													MOF, HPG
Loan effectiveness													MOF, HPG, and ADB

ADB = Asian Development Bank, CFB = county finance bureau, FSR = feasibility study report, HDRC = Henan Development and Reform Commission, HFD = Henan Finance Department, HPG = Henan Provincial Government, MFB = municipal finance bureau, MOF = Ministry of Finance, PMO = project management office, PPE = project participating enterprise.

Source: Asian Development Bank.

B. Overall Project Implementation Plan



ADB = Asian Development Bank, CAHB = county animal husbandry bureau, HAHB = Henan animal husbandry bureau, MAHB = municipal animal husbandry bureau, PPE = project participating enterprise, PPMS = project performance management system.
Source: Asian Development Bank.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations – Roles and Responsibilities

18. HPG will be the executing agency for overall project planning and management. The project coordination group, chaired by the director general of the Henan Provincial Agriculture Department (HDARA), will provide policy guidance, oversight, and interdepartmental coordination for the project. The PMO, established under the Foreign Economic Cooperation Center of HDARA, will provide oversight and coordination for day-to-day project implementation activities.¹⁸ Municipal and county PMOs, established by the six project municipal governments and eight project county governments, will facilitate project implementation at municipal and county levels. Project coordination groups will also be established at municipal and county levels. The implementing agencies are HAHB, five MAHBs and nine CAHBs for output 1, and eight PPEs for output 2. The PMO will organize training under output 3. HAHB will implement output 1 in close coordination with the five MAHBs and nine CAHBs.

19. In October 25, 2018, due to institute reform, Henan Animal Husbandry Bureau (HAHB) and Henan Department of Agriculture (HAD) has been merged and founded Henan Provincial Department of Agriculture and Rural Affairs (HDARA). The duties of HAD has been succeeded by HDARA, and meanwhile the implementing agency HAHB has been revised into HDARA, who will carry out subproject construction contents, duties and obligations of HAHB. Henan Livestock Product Quality Monitoring and Inspection Center (HLPQMIC) under HDARA is responsible for the subproject implementation, and the fixed assets transferred from this subproject belongs to HDARA, and the loan will be repaid by HDARA.

Project Implementation Organizations	Management Roles and Responsibilities
Executing agency: Henan provincial government (HPG)	<ul style="list-style-type: none"> ➤ Provide overall guidance, coordination, supervision, and management for the project preparation and implementation ➤ Coordinate project implementation activities among government agencies
Project coordination group Chair: Director General, Henan Provincial Department of Agriculture and Rural Areas (HDARA) Members: senior representatives from Henan Development and Reform Commission (HDRC), Henan Environmental Protection Department (HEPD), Henan Finance Department (HFD), Henan Food and Drug Administration, Henan Land and Resources Department, Henan Provincial Audit Department, and Henan Poverty Alleviation Office	<ul style="list-style-type: none"> ➤ Provide overall policy guidance ➤ Facilitate interagency coordination ➤ Resolve any institutional problems affecting project preparation and implementation

¹⁸ The Foreign Economic Cooperation Center is the office assigned as the PMO of different foreign-funded projects implemented by the Henan Agriculture Department.

Project Implementation Organizations	Management Roles and Responsibilities
Project management office (PMO; established under Foreign Economic Cooperation Center, HDARA)	<ul style="list-style-type: none"> ➤ Direct project preparation and implementation activities ➤ Prepare the annual work program and budget ➤ Facilitate implementing agencies' engagement of procurement agents and design institutes ➤ Oversee procurement activities, particularly attend bid opening, supervise the bid evaluation process, and endorse bid evaluation reports for all international competitive bidding and national competitive bidding procurement packages ➤ Coordinate financial management of the implementing agencies and consolidate project accounts and financial statements ➤ Prepare and submit withdrawal applications to HFD ➤ Establish baseline data to monitor project impacts, including regular monitoring of physical and financial progress ➤ Submit (i) quarterly project progress reports, (ii) semiannual environmental and social safeguards monitoring reports, (iii) annual audit reports, and (iv) a project completion report to the Asian Development Bank (ADB) and HPG ➤ Liaise with ADB and other agencies ➤ Coordinate for training and capacity development activities
Municipal and county PMOs (established under agriculture and rural affairs bureaus of project municipal and county governments)	<ul style="list-style-type: none"> ➤ Assist the project county governments in signing the project implementation agreements with the project participating enterprises (PPEs), and make the PPEs comply with the covenants of the project implementation agreements and other documents; ➤ Provide the PMO with inputs from the PPEs for the annual work program and budget; ➤ Collect baseline data from the PPEs for the PMO's baseline data establishment; ➤ Monitor the PPEs' project implementation, including physical and financial progress, procurement activities, and social and environmental safeguard compliance; ➤ Report to the PMO on the PPEs' project implementation for the preparation of the (i) quarterly project progress reports, (ii) semiannual environmental and social safeguards monitoring reports, (iii) annual audit reports, and (iv) project completion report to ADB and HPG; and ➤ Carry out other tasks requested by the PMO
HFD	<ul style="list-style-type: none"> ➤ Establish, manage, and reconcile the imprest account ➤ Review, approve, and submit loan withdrawal applications to ADB ➤ Manage and supervise loan repayment ➤ Ensure timely provision of counterpart fund contributions

Project Implementation Organizations	Management Roles and Responsibilities
Implementing agencies (Henan Livestock Product Quality Monitoring and Inspection Center of HDARA ¹⁹ and eight PPEs)	<ul style="list-style-type: none"> ➤ Implement upgrading of laboratories and improvements in product safety monitoring and testing system at provincial, municipal, and county levels (output 1) ➤ Implement respective subproject that covers environmentally sustainable livestock production and processing (output 1) and investment in the PPE's own livestock product quality monitoring and testing system and monitoring of sustainability indicators (output 2) ➤ Recruit procurement agent for procurement activities and design institutes for detailed designs ➤ Carry out bidding, bid evaluation, and signing and administration of contracts with the aid of procurement agents ➤ Ensure environmental and social safeguards are compliant with ADB's Safeguard Policy Statement (2009) ➤ Provide the PMO with necessary inputs into quarterly project progress reports, semiannual environmental and social monitoring reports, and a project completion report ➤ Recruit county environmental monitoring agents to conduct construction-related external monitoring and report to the PMO ➤ Establish and maintain the required project accounting arrangement and other implementation recording systems ➤ Operate and maintain the facilities constructed or improved under the project
HEPD	<ul style="list-style-type: none"> ➤ Review and approve environmental impact assessment (EIA) reports, conduct project completion environmental audit, conduct regular compliance monitoring, order corrective actions and fines for noncompliance ➤ Organize a panel review of the EIA reports ➤ Conduct an environmental audit within 3 months of test operation, and recommend corrective measures if deficiencies are discovered ➤ Carry out regular (usually quarterly) compliance monitoring of the discharges and emissions of the PPEs ➤ Review and approve the environmental assessment report for each subproject, based on the regulations and guidelines of the People's Republic of China ➤ Undertake an audit of the environmental protection facilities upon completion of construction; and issue an approval certificate, if the environmental facilities meet the design criteria, or else issue an order for corrective action ➤ Undertake regular compliance monitoring in coordination with by the municipal environmental

¹⁹ After China's institute reform in 2019, the Henan Livestock Product Quality Monitoring and Inspection Center (HLPQMIC) under Henan Provincial Department of Agriculture and Rural Affairs (HDARA) is responsible for implementing the subproject by the HAHB.

Project Implementation Organizations	Management Roles and Responsibilities
	<p>monitoring center</p> <ul style="list-style-type: none"> ➤ Supervise environmental performance during operation in accordance with the national, provincial, and local regulations and guidelines
Environmental monitoring stations	<ul style="list-style-type: none"> ➤ Will be recruited by each PPE ➤ Conduct external monitoring as described in the environmental management plan and for instructing and supervising operators from different stakeholders to implement mitigation measures ➤ In case of conflicts, analyze and recommend actions to address them
ADB	<ul style="list-style-type: none"> ➤ Provide guidance to HPG and the implementing agencies to ensure compliance with loan and project covenants ➤ Conduct regular loan review missions, a midterm review mission, and a project completion review mission ➤ Review and approve procurement actions ➤ Process withdrawal applications and release loan funds ➤ Monitor the project implementation progress ➤ Review annual audit reports and follow up on audit recommendations ➤ Update regularly the project performance review reports with the assistance of HPG and the implementing agencies ➤ Update regularly the project information documents for public disclosure at the ADB website, including safeguard documents ➤ Monitor implementation of ADB's anticorruption policies

B. Key Persons Involved in Implementation

Executing Agency

Project management office
(PMO)

Mr. Wang Jinzhong
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Director, PMO
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**Asian Development
Bank (ADB)**

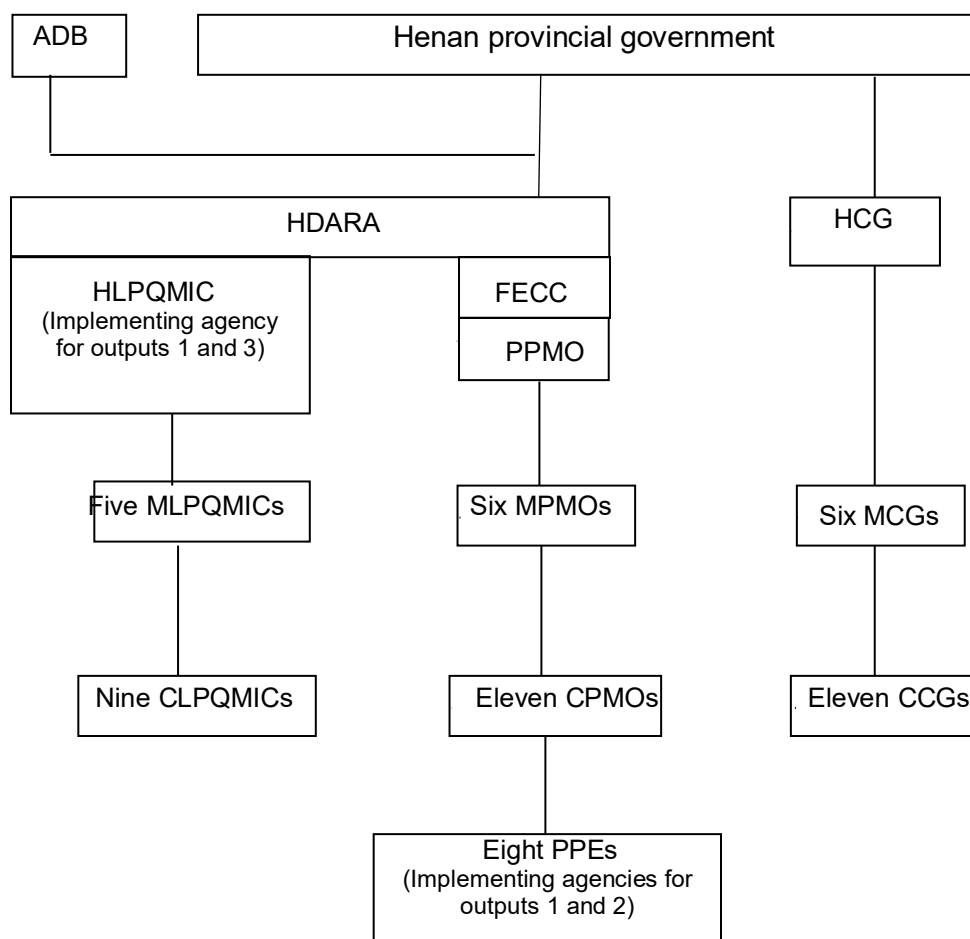
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C. Project Organization Structure



ADB = Asian Development Bank, CLPQMIC²⁰ = County Livestock Product Quality Monitoring and Inspection Center, CCG = county coordination group, CPMO = county project management office²¹, FECC = Foreign Economic Cooperation Center, HDARA = Henan Provincial Department of Agriculture and Rural Areas, HCG = Henan coordination group, MLPQMIC = Municipal Livestock Product Quality Monitoring and Inspection Center²², MCG = municipal coordination group, MPMO = municipal project management office²³, PMO = project management office, PPE = project participating enterprise.
Source: Asian Development Bank.

²⁰ Shenqiu, Gushi, Luoning, Yanling, Shanzhou District, Zhengyang, Neixiang, Jian'an District, Liangyuan district 9 CLPQMICs.

²¹ Gongyi, Shenqiu, Shenqiu, Gushi, Luoning, Yanling, Shanzhou District, Zhengyang, Neixiang, Jian'an District, Liangyuan district and Sheqi 11 CPMOs.

²² Xuchang, Luoyang, Sanmenxia, Shangqiu and Nanyang 5 MLPQMICs.

²³ Xuchang, Zhumadian, Sanmenxia, Xinyang, Nanyang and Zhoukou 6 MPMOs

IV. COSTS AND FINANCING

20. This section describes the project costs, categories, and components to be financed by ADB and HPG. Loan proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time), and subject to the provisions of the loan and project agreements.

A. Investment and Financing Plans

21. The project is estimated to cost \$141.22 million (Table IV.1).

Table IV.1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Upgraded livestock product quality and safety monitoring and inspection facilities	7.60
2. Establishment of environmentally sustainable livestock production facilities	114.90
3. Strengthened capacity and project management	1.02
Subtotal (A)	123.52
B. Contingencies^c	13.44
C. Financing Charges During Implementation^d	4.26
Total (A+B+C)	141.22

- a) Includes taxes and duties of \$6.21 million to be financed from the Asian Development Bank (ADB) loan, \$5.82 million from the project participating enterprise (PPE) resources, and \$0.18 million from government resources. ADB financing of taxes and duties is deemed acceptable as the (i) amount is within the reasonable threshold identified during the preparation of the country partnership strategy, (ii) amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) financing of taxes and duties is material and relevant to the success of the project. Transportation and insurance costs may be financed by the ADB loan.
- b) In mid-2019 prices. Of the base cost, 49.68% will finance civil works; 49.74%, equipment; and 0.58%, consulting services, including survey, design, and inspection.
- c) Physical contingencies computed at 5% for all expenditure categories. Price contingencies computed based on cost escalation factors of 3.0% on local currency costs for 2016–2021, and 1.5% for 2016, 1.4% for 2017, and 1.5% for 2018–2021 on foreign exchange costs.
- d) Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

22. The national government has requested a loan of \$69 million from ADB's ordinary capital resources to help finance the project. The loan will have a 15-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.²⁴ The national government will be the borrower of the loan and relend the loan to HPG. HPG will in turn on-lend a majority of the loan proceeds to project municipal and county governments, which will make the

²⁴ The interest and commitment charges during implementation will not be capitalized in the loan.

loan proceeds available to eight PPEs on the same terms and conditions as those of the ADB loan to the national government. HPG will make the remaining loan proceeds available for output 3 activities and for HAHB to implement relevant part of output 1 activities. HAHB and the PPEs will assume foreign exchange and interest rate risks for their portions of the ADB loan proceeds.

23. The financing plan is in Table IV.2. The ADB loan will finance 49% of the project costs, including civil works, equipment, training, and taxes and duties relating to goods and services. The PPEs and HPG will provide 50% and 1.0% of the project costs, respectively.

Table IV.2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	69.00	49.0
Project participating enterprises	71.10	50.0
Henan Provincial Government	1.12	1.0
Total	141.22	100.0

Source: Asian Development Bank estimates.

B. Detailed Cost Estimates by Expenditure Category

Item	(CNY million) Total Cost ^a	(\$ million) Total Cost	% of Total Base Cost
A. Base Cost^b			
1. Civil works	495.43	71.74	57.8
2. Equipment ^c	237.03	34.32	27.7
3. Training	2.76	0.40	0.3
4. Consultants	6.53	0.95	0.8
5. Survey, design, and inspection	16.19	2.34	1.9
6. Working capital	90.26	13.07	10.5
7. Project management	8.34	1.21	1.0
Subtotal (A)	856.55	124.03	100.0
B. Contingencies^d			
1. Physical	35.34	5.12	4.1
2. Price	53.95	7.81	6.3
Subtotal (B)	89.29	12.93	10.4
C. Financial Charges During Implementation^e			
1. Interest During Implementation	28.35	4.11	3.3
2. Commitment charges	1.07	0.16	0.1
Subtotal (C)	29.43	4.26	3.4
Total Project Cost (A+B+C)	975.26	141.22	
% of Total Project Cost	100.0%	100.0%	

ADB = Asian Development Bank, HPG = Henan provincial government, PPEs = project participating enterprises.

Note: Numbers may not sum precisely because of rounding.

- a) Includes taxes and duties of \$6.21 million to be financed from the Asian Development Bank (ADB) loan, \$5.82 million from the project participating enterprise (PPE) resources, and \$0.18 million from government resources. ADB financing of taxes and duties is deemed acceptable as the (i) amount is within the reasonable threshold identified during the preparation of the country partnership strategy, (ii) amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) financing of taxes and duties is material and relevant to the success of the project. Transportation and insurance costs may be financed by the ADB loan.
- b) In mid-2019 prices. Of the base cost, 49.68% will finance civil works; 49.74%, equipment; and 0.58%, consulting services, including survey, design, and inspection.
- c) Corresponds to category "Goods" in the loan allocation table (Attachment to Schedule 3 of the loan agreement)
- d) Physical contingencies computed at 5% for all expenditure categories. Price contingencies computed based on cost escalation factors of 3.0% on local currency costs for 2016–2021, and 1.5% for 2016, 1.4% for 2017, and 1.5% for 2018–2021 on foreign exchange costs.
- e) Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

C. Allocation and Withdrawal of Loan Proceeds

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Henan Sustainable Livestock Farming and Product Safety Demonstration Project)							Remarks
No.	Item	Total Amount Allocated for ADB Financing (\$)		Percentage and Basis for Withdrawal from the Loan Account			
		Category	Subcategory				
1	Works ^a	34,278,313					
1A	Afanti	0					Dropped out
1B	Dadi		2,350,932	42%	of total expenditure claimed		
1C	Donghan	0					Dropped out
1D	Fenghua		1,345,164	36%	of total expenditure claimed		
1E	Hengtianran		4,129,450	39%	of total expenditure claimed		
1F	Kerchin	0					Dropped out
1G	Muyuan		3,927,012	38%	of total expenditure claimed		
1H	Niuniu	0					Dropped out
1I	Sangao		5,580,855	75%	of total expenditure claimed		
1J	Muyuan Meat		11,649,100	50%	of total expenditure claimed		
1K	Sheqi Muyuan		2,299,200	40%	of total expenditure claimed		
1L	Yongxin		2,996,600	60%	of total expenditure claimed		
2	Goods	34,321,687		100%	of total expenditure claimed		
3	Training	400,000		100%	of total expenditure claimed		
	Total	69,000,000.00					

ADB = Asian Development Bank, HAHB = Henan Animal Husbandry Bureau, PPE = project participating enterprise.

^a Includes taxes, duties, insurance, and translation.

Source: Asian Development Bank estimates.

D. Detailed Cost Estimates by Financier (\$ million)

Item	ADB		PPEs		Government		Total cost ^a (\$ million)	% of Total Cost
	Amount (\$ million)	%	Amount (\$ million)	%	Amount (\$ million)	%		
A. Base Cost^b								
1. Civil works								
Dadi	2.35	42.00	3.25	58.00			5.60	3.96
Fenghua	1.35	36.00	2.39	64.00			3.74	2.65
Hengtianran	4.13	39.00	6.46	61.00			10.59	7.50
Muyuan	3.93	38.00	6.41	62.00			10.33	7.32
Sangao	5.58	75.00	1.86	25.00			7.44	5.27
Muyuan Meat	11.65	50.00	11.65	50.00			23.30	16.50
Sheqi Muyuan	2.30	40.00	3.45	60.00			5.75	4.07
Yongxin	3.00	60.00	2.00	40.00			4.99	3.54
2. Goods ^c							0.00	0.00
PPEs	26.72	100.00	0.00	0.00			26.72	18.92
HDARA ²⁵	7.60	100.00	0.00	0.00			7.60	5.38
3. Training							0.00	0.00
ADB-financing	0.40	100.00	0.00	0.00			0.40	0.28
4. Consultants	0.00	0.00	0.48	50.53	0.47	49.47	0.95	0.67
5. Survey, design, and inspection	0.00	0.00	2.34	100.00			2.34	1.66
6. Working capital	0.00	0.00	13.07	100.00			13.07	9.25
7. Project management	0.00	0.00	1.06	87.97	0.15	12.03	1.21	0.85
Subtotal (A)	69.00	55.63	54.41	43.87	0.62	0.50	124.03	87.83
B. Contingencies^e								0.00
1. Physical	0.00	0.00	5.12	100.00			5.12	3.63
2. Price	0.00	0.00	7.81	100.00			7.81	5.53
Subtotal (B)	0.00	0.00	12.93		0.00	0.00	12.93	9.16
C. Financial Charges During Implementation								0.00
1. Interest During Implementation	0.00		3.62	88.25	0.48	11.75	4.11	2.91
2. Commitment charges	0.00		0.14	89.69	0.02	10.31	0.16	0.11
Subtotal (C)	0.00		3.76		0.50		4.26	3.02

²⁵ The Henan Animal Husbandry Bureau (HAHB) has been merged into Henan Provincial Department of Agriculture and Rural Affairs (HDARA).

Item	ADB		PPEs		Government		Total cost ^a (\$ million)	% of Total Cost
	Amount (\$ million)	%	Amount (\$ million)	%	Amount (\$ million)	%		
Total Project Cost (A+B+C)	69.00	48.86	71.10	50.35	1.11	0.79	141.22	100.00

ADB = Asian Development Bank, HPG = Henan provincial government, PPEs = project participating enterprises.

Note: Numbers may not sum precisely because of rounding.

- a) Includes taxes and duties of \$6.21 million to be financed from the Asian Development Bank (ADB) loan, \$5.82 million from the project participating enterprise (PPE) resources, and \$0.18 million from government resources. ADB financing of taxes and duties is deemed acceptable as the (i) amount is within the reasonable threshold identified during the preparation of the country partnership strategy, (ii) amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) financing of taxes and duties is material and relevant to the success of the project. Transportation and insurance costs may be financed by the ADB loan.
- b) In mid-2019 prices. Of the base cost, 49.68% will finance civil works; 49.74%, equipment; and 0.58%, consulting services, including survey, design, and inspection.
- c) Corresponds to category "Goods" in the loan allocation table (Attachment to Schedule 3 of the loan agreement)
- d) Physical contingencies computed at 5% for all expenditure categories. Price contingencies computed based on cost escalation factors of 3.0% on local currency costs for 2016–2021, and 1.5% for 2016, 1.4% for 2017, and 1.5% for 2018–2021 on foreign exchange costs.
- e) Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

E. Detailed Cost Estimates by Financier (\$ million)

Item	Total Cost (\$ million)	1.Livestock product safety monitoring and inspection facilities upgraded		2. Environmentally sustainable livestock production facilities established		3.Capacity and project management strengthened		% of Total Cost
		Amount (\$ million)	% of Cost Category	Amount (\$ million)	% of Cost Category	Amount (\$ million)	% of Cost Category	
A. Base Cost								
1. Civil works	71.23			71.23	100.00			50.44
2. Equipment	34.32	7.60	22.14	26.72	77.86			24.30
3. Training	0.40					0.40	100.00	0.28
4. Consultants	0.95			0.48	50.28	0.47	49.72	0.67
5. Survey, design, and inspection	2.34			2.34	100.00			1.66
6. Working capital	13.07			13.07	100.00			9.26
7. Project management	1.21	0.00	0.00	1.06	88.00	0.15	12.00	0.86
Subtotal (A)	123.52	7.60	6.15	114.90	93.03	1.02	0.82	87.47
B. Contingencies								
1. Physical	5.12	0.00	0.00	5.12	100.00	0.00	0.00	3.62
2. Price	8.32	0.00	0.00	8.32	100.00	0.00	0.00	5.89
Subtotal (B)	13.44	0.00	0.00	13.44	100.00	0.00	0.00	9.52
C. Financial Charges During Implementation								
1. Interest During Implementation	4.11	0.46	11.21	3.62	88.25	0.02	0.54	2.91
2. Commitment charges	0.16	0.02	9.71	0.14	89.69	0.00	0.60	0.11
Subtotal (C)	4.26	0.48	11.15	3.76	88.30	0.02	0.54	3.02
Total Project Cost (A+B+C)	141.22	8.08	5.72	132.10	93.55	1.04	0.74	100.00

ADB = Asian Development Bank, HPG = Henan provincial government, PPEs = project participating enterprises.

Note: Numbers may not sum precisely because of rounding.

- Includes taxes and duties of \$6.21 million to be financed from the Asian Development Bank (ADB) loan, \$5.82 million from the project participating enterprise (PPE) resources, and \$0.18 million from government resources. ADB financing of taxes and duties is deemed acceptable as the (i) amount is within the reasonable threshold identified during the preparation of the country partnership strategy, (ii) amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) financing of taxes and duties is material and relevant to the success of the project. Transportation and insurance costs may be financed by the ADB loan.
- In mid-2019 prices. Of the base cost, 49.68% will finance civil works; 49.74%, equipment; and 0.58%, consulting services, including survey, design, and inspection.
- Corresponds to category "Goods" in the loan allocation table (Attachment to Schedule 3 of the loan agreement)

- d) Physical contingencies computed at 5% for all expenditure categories. Price contingencies computed based on cost escalation factors of 3.0% on local currency costs for 2016–2021, and 1.5% for 2016, 1.4% for 2017, and 1.5% for 2018–2021 on foreign exchange costs.
- e) Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

Source: ADB estimates.

F. Detailed Cost Estimates by Year (\$ million)

Item	Total Cost	2017	2018	2019	2020	2021
A. Base Cost						
1. Civil works	71.74		10.46	13.91	47.37	0.00
2. Equipment	34.32		3.00	4.95	26.37	0.00
3. Training	0.40			0.20	0.20	0.00
4. Consultants	0.95	0.07	0.07	0.07	0.74	0.00
5. Survey, design, and inspection	2.34	0.02		0.29	2.03	0.00
6. Working capital	13.07			5.00	8.07	0.00
7. Project management	1.21	0.19	0.02	0.50	0.50	0.00
Subtotal (A)	124.03	0.28	13.55	24.92	85.28	0.00
B. Contingencies						
1. Physical	5.12			2.00	3.12	0.00
2. Price	7.81			4.00	3.81	0.00
Subtotal (B)	12.93	0.00	0.00	6.00	6.93	0.00
C. Financial Charges During Implementation						
1. Interest During Implementation	4.11			1.11	3.00	0.00
2. Commitment charges	0.16			0.02	0.14	0.00
Subtotal (C)	4.26		0.00	1.12	3.14	0.00
Total Project Cost (A+B+C)	141.22	0.28	13.55	32.04	95.35	0.00
% of Total Cost		0.20	9.59	22.69	67.52	0.00

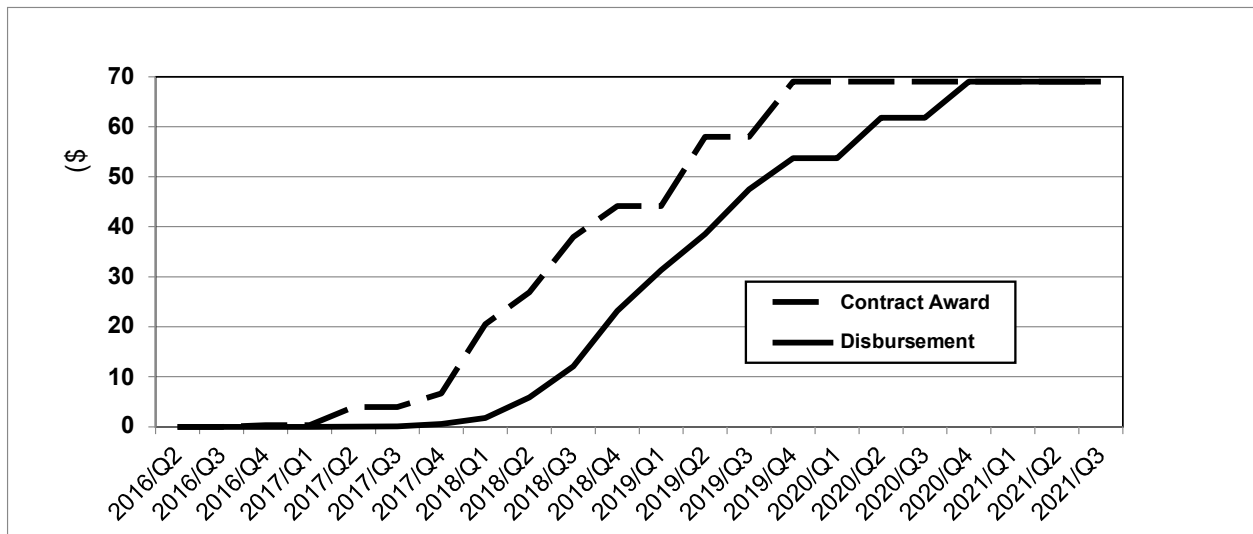
- a) Includes taxes and duties of \$6.21 million to be financed from the Asian Development Bank (ADB) loan, \$5.82 million from the project participating enterprise (PPE) resources, and \$0.18 million from government resources. ADB financing of taxes and duties is deemed acceptable as the (i) amount is within the reasonable threshold identified during the preparation of the country partnership strategy, (ii) amount does not represent an excessive share of the project investment plan, (iii) taxes and duties apply only to ADB-financed expenditures, and (iv) financing of taxes and duties is material and relevant to the success of the project. Transportation and insurance costs may be financed by the ADB loan.
- b) In mid-2019 prices. Of the base cost, 49.68% will finance civil works; 49.74%, equipment; and 0.58%, consulting services, including survey, design, and inspection.
- c) Corresponds to category "Goods" in the loan allocation table (Attachment to Schedule 3 of the loan agreement)
- d) Physical contingencies computed at 5% for all expenditure categories. Price contingencies computed based on cost escalation factors of 3.0% on local currency

costs for 2016–2021, and 1.5% for 2016, 1.4% for 2017, and 1.5% for 2018–2021 on foreign exchange costs.

- e) Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar swap rate plus a spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

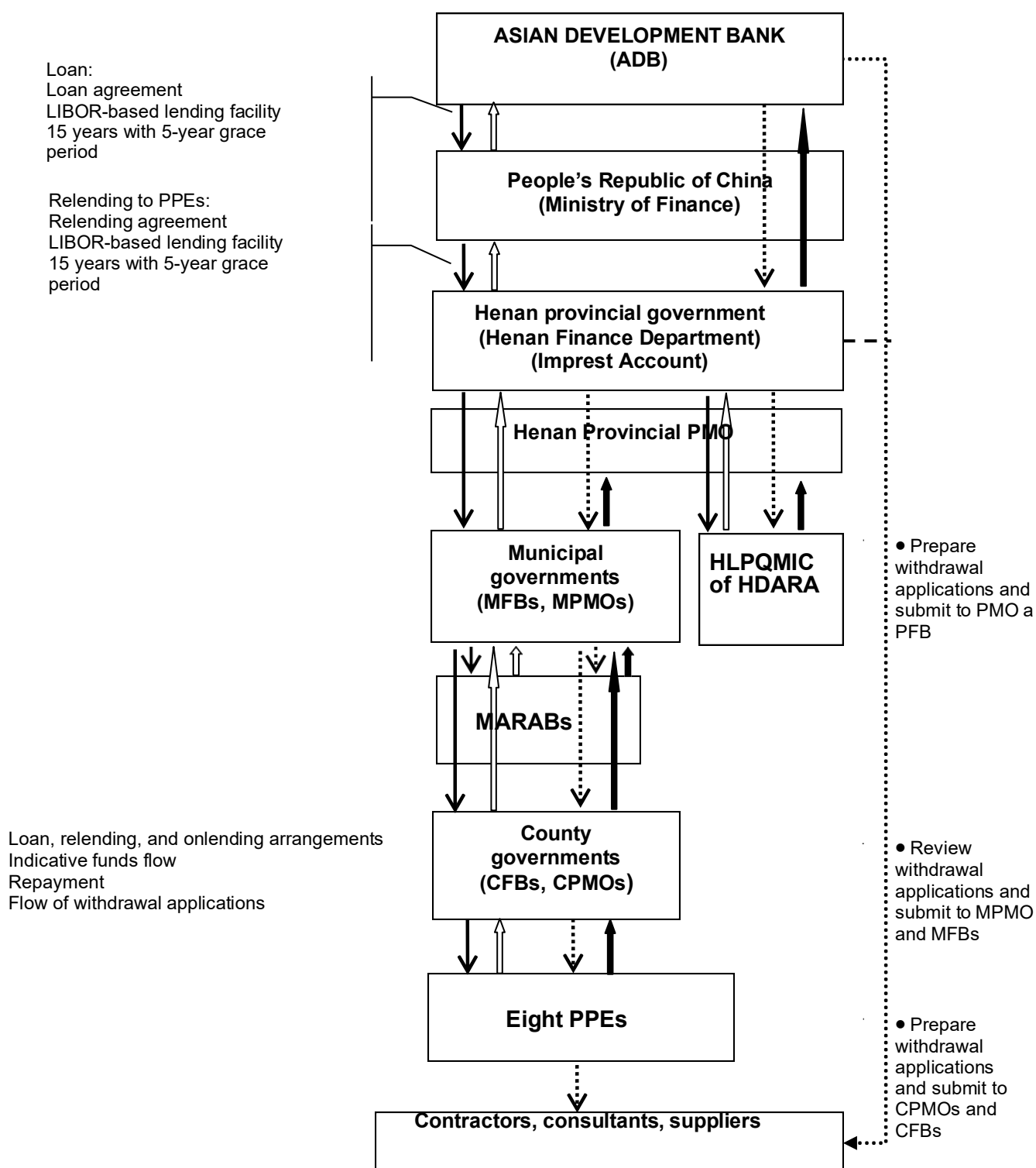
Source: ADB estimates.

G. Contract and Disbursement S-Curve



	Contract Award					Disbursement				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2016		0.00	0.00	0.30	0.30		0.00	0.00	0.00	0.00
2017	0.00	3.65	0.00	2.71	6.36	0.00	0.03	0.09	0.45	0.57
2018	13.84	6.40	11.05	6.17	37.46	1.18	4.10	6.26	11.05	22.59
2019	0.00	13.84	0.00	11.05	24.89	8.14	7.22	8.94	6.25	30.55
2020	0.00	0.00	0.00	0.00	0.00	0.00	8.07	0.00	7.22	15.29
2021	0.00	0.00	0.00			0.00	0.00	0.00		
Total					69.00					69.00

H. Fund Flow Diagram



CARAB = County Agriculture and Rural Affairs Bureau, CFB = county finance bureau, CPMO = county project management office, HLPQMIC = Henan Livestock Product Quality Monitoring and Inspection Center, HDARA = Henan Provincial Department of Agriculture and Rural Affairs, HFD = Henan Finance Department, MARAB = Municipal Agriculture and Rural Affairs Bureau, MFB = municipal finance bureau, MPMO = municipal project management office, PFB = provincial finance bureau, PPE = project participating enterprise, PMO = project management office.

Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

24. The financial management assessment (FMA) was conducted in accordance with ADB's pertinent guidelines. The FMA includes a review of the executing and implementing agencies (including each PPE): (i) funds flow arrangement; (ii) the staff of finance; (iii) accounting policies and procedures (segregation of duties, budgeting system, payments, policies and procedures, cash and banking, safeguarding assets, other offices, and implementing agencies); (iv) internal and external auditing; (v) reporting and monitoring, and (vi) information systems. The instrument used for the assessment was ADB's FMA questionnaire.

25. The Henan Finance Department (HFD), particularly its international division, as the project imprest account holder, has sufficient financial management experience for donor-funded projects, including 10 ADB loan projects since 2000. The assessment confirmed that HFD meets all ADB requirements. The project management office, currently implementing ADB's Loan 2474-PRC: Dryland Sustainable Agriculture Project,²⁶ is also demonstrated as experienced with ADB projects. The 9 implementing agencies (i.e., HLPQMIC of HDARA and eight PPEs) are classified into three categories based on the extent to which they meet ADB's financial management requirements.²⁷ Muyuan group involving 3 PPEs (MY, MYM and SQMY) of eight PPEs is classified in the first category, which meets all the requirements. HAHB and the three PPEs (FH, SG and YX PPEs) are grouped into the second category, which mostly meet ADB's financial management requirements. The remaining two PPEs (Dadi and Hengtianran PPEs) are classified into the third category, which meet minimum financial management requirements.

26. The overall financial management risk of the project is considered moderate given relatively low risk at the executing agency, but varying financial management capacity at the eight PPEs. The PPEs' lack of experience of ADB project management, lack of accounting staff, and insufficient internal auditing are major issues identified, which will be closely monitored during project implementation. Significant training and support will be required on ADB policies and procedures, including procurement, disbursement, and project management. A comprehensive financial policies and procedures manual should be developed in order to guide financial management activities and ensure staff accountability at the implementing agency level. The HPG will ensure that each PPE to appoint finance staff to manage project accounts and provide financial management assistance as needed. The following are the recommended actions to mitigate the identified risks.

Financial Management Action Plan for Risk Mitigation

²⁶ ADB. 2008. Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grant to the People's Republic of China for the Dryland Sustainable Agriculture Project. Manila.

²⁷ The criteria are financial regulations, standards or pronouncement used by the entity, the legal and organizational information concerning structure of the entity, financial statement reports, and audit reports during 2010–2012, agreements and contracts, Chart of Accounts, organization of the entity, structure of the financial section, and information of financial staff and others relating to finance of the entity.

Risk	Action	Responsible entity	Timeline
Weak capacity of IAs on ADB policies and procedures especially 3 rd and 2 nd categories	Provide training to build up capacity of the financial staff of the EAs and IAs on ADB loan disbursement procedures and project accounting requirements before the Project is implemented to avoid delay in the disbursement process.	ADB, EA, IA, PPEs, PMC and PMO staff	Before and during project implementation
	Regular liaison between the Henan PDF/PPMO, MGs, CGs and other participating government bureaus and agencies and ADB to ensure that ADB guidelines are followed.	ADB, EA, IA, PPEs, PMC and PMO staff	During project implementation.
	Regular interagency coordination at all levels to be put in place to discuss the portfolio performance of the loan.	ADB, EA, IA, PPEs, and PMC and PMO staff	During project implementation.
Weak capacity of IAs on monitoring, evaluation, and audit	Provide financial and technical support to upgrade the existing project management information system (PROMIS) to develop monitoring and evaluation capability in the IAs.	EA, IA, PPEs, and PMO staff	Before and during project implementation.
	Separate accounts to be maintained for all project components financed by ADB and the Government, and to be audited by the State/Provincial Auditors and/or an external auditor acceptable to ADB.	EA, IA, PPEs and PMO staff	Before and during project implementation.
	Annual project accounts and underlying working papers prepared by the IAs on a timely basis in preparation for the annual financial statement audit.	EA, IA, PPEs and PMO staff	During project implementation.
	Quarterly and annual progress reports on project implementation and operation prepared.	EA, IA, PPEs, PMC and PMO staff	During project implementation.
	Compliance with loan covenants monitored, including submission of audited project accounts.	EA, IA, PPEs and PMO staff	During project implementation.
Overall	Overall, the IAs established and maintained sound financial management systems, including, (i) the establishment of separate project accounts and records; (ii) data processing and systems financial reports; (iii) recruit additional finance staff as needed; and (iv) seek external assistance in financial management if needed.		

B. Disbursement

27. The loan proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time),²⁸ and detailed arrangements agreed upon between the government and ADB.

28. Direct payment, reimbursement, commitment, and imprest fund procedures may be used to withdraw funds from the loan account. To expedite the flow of funds and simplify document processing, the statement of expenditures (SOE) procedure may be used to reimburse, replenish, and liquidate eligible expenditures for any individual payment not exceeding \$200,000 equivalent. Payments exceeding this ceiling will be reimbursed, replenished, and liquidated based on the full documentation process. SOE records should be maintained and made readily available for review by ADB's disbursement and review mission, or upon ADB's request for submission of supporting documents on a sampling basis and for independent audit.²⁹

29. An imprest account will be set up for the project by HFD in a commercial bank acceptable to ADB. HFD will be responsible for the management, monitoring, and reconciliation of the imprest account. For every liquidation and replenishment request of the imprest account, the borrower will furnish to ADB (i) the statement of account (bank statement) where the imprest account is maintained, and (ii) the imprest account reconciliation statement reconciling the above-mentioned bank statement against the executing agency's records. Follow the format provided in Appendix 30 of ADB's Loan Disbursement Handbook (2015, as

²⁸ Available at: <http://www.adb.org/documents/loan-disbursement-handbook>

²⁹ Checklists for SOE procedures and formats are in Appendices 9A and 9B of the Loan Disbursement Handbook (2015, as amended from time to time). Available at: <http://www.adb.org/documents/loan-disbursement-handbook>

amended from time to time). The bank charges in the operation of the imprest account may be financed from the loan proceeds. The total outstanding advance to the imprest account should not exceed the estimate of ADB's share of expenditures to be paid through the imprest account for the forthcoming 6 months. The executing agency may request for initial and additional advances to the imprest account based on an estimate of expenditure sheet available in Appendix 9B of ADB's Loan Disbursement Handbook (2015, as amended from time to time), setting out the estimated expenditures to be financed through the account for the forthcoming 6 months, and submission of evidence satisfactory to ADB that the imprest account has been duly opened. Supporting documents should be submitted to ADB or retained by the executing agency and the implementing agencies in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time) when liquidating or replenishing the imprest account.

30. Before the submission of the first withdrawal application, HPG should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US\$100,000 equivalent. Individual payments below this amount should be (i) paid by HPG and subsequently claimed to ADB through reimbursement, or (ii) through the imprest fund procedure.

C. Accounting

31. HFD, on behalf of HPG, will maintain, or cause to be maintained, separate project accounts and records by funding source for all expenditures incurred on the project. HFD will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations, which are consistent with international accounting principles and practices.

D. Auditing

32. HPG will cause the project implementing agencies to (i) maintain separate accounts and records for the project; (ii) have their general financial statements and the financial statements for the project audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iii) enable ADB, upon ADB's request, to discuss the financial statements for the project and financial affairs of the project implementing agencies where they relate to the project with the auditors appointed, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of HPG and the relevant project implementing agency, unless HPG and the relevant project implementing agency shall otherwise agree. HPG will cause the detailed consolidated project accounts to be audited in accordance with International Standards on Auditing and the Government Auditing Standards of the PRC (where these are consistent with International Standards on Auditing), by an auditor acceptable to ADB. The audited project financial statements will be submitted in English language to ADB within 6 months of the end of the fiscal year by the executing agency.

33. The annual audit report for the project will include an audit management letter³⁰ and auditor's opinions, which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable

³⁰ A management letter means formal communications from the auditor to the client management in accordance with the International Standard on Auditing 265 (communicating deficiencies in internal control to those charged with governance and management), which is not required to be provided separately as it is equivalent to the Audit Findings and Recommendations prepared by the project auditor and submitted to ADB.

financial reporting framework; (ii) whether loan proceeds were used only for the purposes of the project; (iii) the level of compliance for each financial covenant contained in the loan and project agreements, including compliance with those key financial ratios described in para. 36; (iv) use of the imprest fund procedure; and (v) use of the SOE procedure certifying to the eligibility of those expenditures claimed under SOE procedures, and proper use of the SOE and imprest procedures in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time) and the project documents.

34. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

35. The government, HPG, and the implementing agencies have been made aware of ADB's policy on delayed submission,³¹ and the requirements for satisfactory and acceptable quality of the audited project financial statements. ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

36. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Access to Information Policy (AIP) (2018).³² After review, ADB will disclose the financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on the ADB website. The audit management letter will not be disclosed.

E. Financial Performance of the Project Participating Enterprises

37. The PPEs shall submit audited entity financial statements to the PMO within 6 months after the end of each financial year. HPG will submit to ADB a brief review of the PPEs' financial performance with key financial ratios as part of project progress reporting for the third quarter of every year during project implementation. The PPEs shall maintain a debt-equity ratio not exceeding 1.5 (60:40), a debt service coverage ratio of at least 1.2, and a current ratio of at least 1.0. When HPG identifies poor financial performance of any PPE, HPG shall consult with ADB regarding measures to be taken to resolve the problem, if deemed necessary.

³¹ When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (i) the audit documents are overdue; and (ii) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.

- When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (i) inform the executing agency of ADB's actions, and (ii) advise that the loan may be suspended if the audit documents are not received within the next 6 months.

- When audited project financial statements have not been received within 12 months after the due date, ADB may suspend the loan.

³² Available from <https://www.adb.org/documents/access-information-policy>.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

38. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time)³³ and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).³⁴ The issuance of invitations for bids, bidding documents, bid evaluations, and recommendation of contract awards under advance contracting and retroactive financing will be subject to ADB approval. The executing and implementing agencies have been advised that approval of advance contracting and retroactive financing does not commit ADB to financing the project. The borrower and the executing and implementing agencies have been advised that retroactive financing may only apply up to 20% of the amount of the ADB loan in respect for expenditures incurred before loan effectiveness, but not earlier than 12 months before the signing of the loan agreement.

B. Procurement of Goods, Works, and Consulting Services

39. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). Contracts for goods estimated to cost \$3.0 million and above and contracts for works estimated to cost \$40.0 million and above shall be procured using international competitive bidding (ICB) procedures. Contracts for works and goods estimated to cost less than the above ICB value but equal to \$100,000 and above will be procured through national competitive bidding (NCB) procedures. NCB will be conducted in accordance with the PRC's Tendering and Bidding Law (1999), subject to modifications agreed with ADB.³⁵ Contracts for goods and works estimated to cost less than the above NCB values will be procured using shopping procedures. The relevant sections of ADB's Anticorruption Policy (1998, as amended from time to time)³⁶ will be included in all procurement documents and contracts.

40. Procurement under the ICB procedures shall use the latest ADB standard bidding documents which can be downloaded from the ADB website. Documents for all procurement under ICB will be subject to the prior review of ADB.

41. For procurement under NCB, the following provisions will apply: (i) the advertisement may be limited to the national press, an official gazette or an open access website; (ii) bidding shall follow the standard bidding documents issued by the Ministry of Finance (MOF) and approved by ADB; and (iii) bidding documents may be only in the Chinese language, and CNY may be used for the purpose of bidding and payment. Procurement under NCB will be subject to the provisions of the NCB annex of the procurement plan. Additionally, before the start of any procurement, ADB and the government will review the public procurement laws of the central and provincial governments to ensure consistency with ADB's Procurement Guidelines (2015, as amended from time to time).

42. For ICB, all invitations for bids, bidding documents, bid evaluation reports, and draft negotiated contracts need ADB's prior review and approval. For NCB, invitations for bids, bidding documents, bid evaluation reports, and draft negotiated contracts for the first NCB for civil works and the first NCB for goods need ADB's prior review and approval. For subsequent NCB packages, invitations for bids, bidding documents, bid evaluation reports, and signed

³³ Available at: <http://www.adb.org/documents/procurement-guidelines>

³⁴ Available at: <http://www.adb.org/documents/guidelines-use-consultants-asian-development-bank-and-its-borrowers>

³⁵ For NCB for works and goods, Chinese Model Bidding Documents: Procurement of Civil Works/Goods under National Competitive Bidding (NCB) issued by the Ministry of Finance in January 2012 and enforced on 1 June 2012 will be used as model NCB documents.

³⁶ Available at: <https://www.adb.org/documents/anticorruption-policy>

contracts provided they are consistent with previously approved documents will not require ADB's prior review. However, such documents will be subject to post-review and must be submitted to ADB's as soon as they are completed and issued, but no later than one month after their issuance

43. Project implementation consultants³⁷ (PIC), which will be financed by HPG, will be recruited to assist the PMO in managing the project implementation. The terms of reference of the PIC are in Annex 2.

44. A procurement plan (including 18 months), indicating contract value, procurement method, threshold and review procedures, goods, works, and consulting services contract packages, and national competitive bidding guidelines, is in subsection C.

³⁷ Project implementation consultants and loan implementation consultants are used interchangeably

C. PROCUREMENT PLAN

Basic Data

Project Name: Henan Sustainable Livestock Farming and Product Safety Demonstration Project	
Project Number: 46081-002	Approval Number: 3296
Country: China, People's Republic of	Executing Agency: Henan Provincial Government (HPG)
Project Financing Amount: US\$ 141,220,000 ADB Financing: US\$ 69,000,000 Cofinancing (ADB Administered): Non-ADB Financing: US\$ 72,220,000	Implementing Agency: N/A Project Closing Date: 31 August 2021
Date of First Procurement Plan: 29 September 2015	Date of this Procurement Plan: August 2019, Version 5
Advance Contracting: Yes	e-GP: No

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

45. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 3,000,000 and Above	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.
National Competitive Bidding for Goods	Between US\$ 100,001 and US\$ 2,999,999	The first NCB procurement documents for goods should be submitted for prior ADB review and approval. Subsequent NCB procurement documents will be subject to post-review.
Shopping for Goods	Up to US\$ 100,000	
Government Procedure for Goods	Between US\$ 100,001 and US\$ 2,999,999	Procurement to be done following the established commercial practices which are acceptable to the PRC government
International Competitive Bidding for Works	US\$ 40,000,000 and Above	Invitation for bids, bidding documents, and bid evaluation and recommendation for contract awards will be subject to ADB's prior review.
National Competitive Bidding for Works	Between US\$ 100,001 and US\$ 39,999,999	The first NCB procurement documents for works should be submitted for prior ADB review and approval. Subsequent NCB procurement documents will be subject to post-review.
Shopping for Works	Up to US\$ 100,000	

Consulting Services	
Method	Comments
Others for Consulting Firm	Recruitment method follows the PRC government procedures.

2. Goods and Works Contracts Estimated to Cost \$1 Million or More

46. The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
MYM-CW-1	Slaughter house for Henan Muyuan Meat Co., Ltd.	22,660,000.00	NCB	Prior	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
MYM-GS-1	Sewage treatment equipment for Henan Muyuan Meat Co., Ltd.	1,170,000.00	NCB	Prior	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
MYM-GS-3	Fully automatic stereo storage equipment for Henan Muyuan Meat Co., Ltd.	1,940,000.00	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SQMY-CW-1	Civil Works procurement for Sheqi Muyuan Livestock Co., Ltd.	7,170,000.00	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SQMY-GS-6	Breeding and environmental supporting equipment for Sheqi Muyuan Livestock Co., Ltd.	1,800,000.00	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
YX-CW-1	Civil Works procurement for Zhoukou Yongxin Feed Co., Ltd.	3,600,000.00	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
YX-GS-2	Breeding equipment for Zhoukou Yongxin Feed Co., Ltd.	1,126,000.00	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods

3. Consulting Services Contracts Estimated to Cost \$100,000 or More

47. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None							

4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

48. The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
FH-GS-1	Product quality and safety testing equipment for Henan Fenghua Breeding Share Co., Ltd.	154,836.07	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
HTR-GS-1	Product quality and safety testing equipment for Henan Hengtianran Pasture Farming Co., Ltd.	10,150.00	1	Shopping	Post		Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
HTR-GS-3	Organic fertilizer processing equipment for Henan Hengtianran Pasture Farming Co., Ltd.	91,800.00	1	Shopping	Post		Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SG-GS-1	Product quality and safety testing equipment for Henan Sangao Agriculture and Animal Husbandry Co., Ltd.	37,704.92	1	Shopping	Post		Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SG-GS-4	Feed processing facilities (including bulk skip) for Henan Sangao Agriculture and Animal Husbandry Co., Ltd.	169,475.59	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
MYM-GS-2	Slaughter traceability system for Henan Muyuan Meat Co., Ltd.	440,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding
SQMY-GS-1	Automatic feeding and heat exchange system for Sheqi Muyuan Livestock Co., Ltd.	480,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding
SQMY-GS-2	Quality safety equipment for Sheqi Muyuan Livestock Co., Ltd.	470,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
SQMY-GS-3	Breeding equipment fan for Sheqi Muyuan Livestock Co., Ltd.	140,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SQMY-GS-4	Breeding auxiliary equipment for Sheqi Muyuan Livestock Co., Ltd.	270,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
SQMY-GS-5	Aquaculture support network for Sheqi Muyuan Livestock Co., Ltd.	340,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
YX-GS-1	Quality safety equipment for Zhoukou Yongxin Feed Co., Ltd.	270,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods
YX-GS-3	Methane and organic fertilizer equipment for Zhoukou Yongxin Feed Co., Ltd.	600,000.00	1	NCB	Post	1S1E	Q4/2020	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Goods

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None								

B. Indicative List of Packages Required Under the Project

49. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
None							

Consulting Services							
Package	General	Estimated	Number of	Recruitment	Review	Type of	Comments
None							

C. List of Awarded and On-going, and Completed Contracts

50. The following tables list the awarded and on-going contracts, and completed contracts.

Goods and Works										
Package Number	General Description	Estimated Value(USD)	Awarded Contract Value (USD)	Awarded Contract Value (CNY)	ADB Financing (Counted by rate) (USD)	ADB Financing (CNY)	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments Cat./% of ADB Financing/PC SS No.
AHB-GS-3	Laboratory information management system	590,163.93	420,174.26	2,850,000.00	420,174.26	2,850,000.00	NCB	Q2/2018	2019/1/10	02/100%/0011
MY-CW-1	10,000-head pig breeding farm (Farm 24) for Muyuan Foodstuff Co., Ltd.	6,446,608.36	5,985,288.22	39,723,160.89	2,274,409.52	15,094,801.14	NCB	Q1/2017	2017/11/23	01G/38%/0001
MY-CW-2	50,000-head pig fattening farm (Farm 25) for Muyuan Foodstuff Co., Ltd.	3,149,349.18	3,520,378.25	23,364,046.36	1,337,743.74	8,878,337.62	NCB	Q1/2017	2017/11/23	01G/38%/0002
MY-GS-1	Organic fertilizer processing equipment for farms 24 and 25 of Muyuan Foodstuff Co., Ltd.	518,032.79	457,316.45	3,131,200.00	457,316.45	3,131,200.00	NCB	Q4/2017	2018/8/16	02/100%/0006
MY-GS-2	Pig fattening equipment for Farms 24 and 25 of Muyuan Foodstuff Co., Ltd.	2,694,740.66	2,501,674.07	16,438,000.00	2,501,674.07	16,438,000.00	NCB	Q4/2017	2018/4/3	02/100%/0003
MY-GS-3	Product quality and safety testing equipment for Muyuan Foodstuff Co., Ltd.	1,641,639.34	1,652,766.79	10,860,000.00	1,652,766.79	10,860,000.00	NCB	Q4/2017	2018/4/3	02/100%/0004
MY-GS-4	Biogas facilities for Farms 24 and 25 of Muyuan Foodstuff Co., Ltd.	518,131.15	461,230.63	3,158,000.00	461,230.63	3,158,000.00	NCB	Q4/2017	2018/8/16	02/100%/0007

SG-CW-1	Chicken Breeding Farm and Organic Fertilizer for Henan Sangao Agriculture and Animal Husbandry Co., Ltd.	3,813,377.05	3,333,039.33	23,100,295.66	2,499,779.50	17,325,221.75	NCB	Q1/2018	2018/10/12	011/75%/0009
SG-GS-2	Chicken fattening facility for Henan Sangao Agriculture and Animal Husbandry Co., Ltd.	2,890,819.67	2,711,964.02	18,795,809.00	2,711,964.02	18,795,809.00	NCB	Q1/2018	2018/10/12	02/100%/0008
AHB-GS-1.1	Laboratory equipment (provinces, municipalities, counties)	2,655,737.70	1,567,042.68	10,780,000.00	1,567,042.68	10,780,000.00	ICB	Q4/2018	2019/7/31	02/100%/0014
AHB-GS-1.4	Laboratory equipment (province, municipalities)	2,044,262.30	1,653,829.24	11,617,802.00	1,653,829.24	11,617,802.00	ICB	Q4/2018	2019/9/5	02/100%/0015
AHB-GS-1.2	Laboratory equipment (province, municipalities)	918,032.79	738,457.96	5,080,000.00	738,457.96	5,080,000.00	ICB	Q4/2018	2019/7/31	02/100%/0012
AHB-GS-1.3	Laboratory equipment (province, municipalities)	795,081.97	579,689.50	3,987,800.00	579,689.50	3,987,800.00	ICB	Q4/2018	2019/7/31	02/100%/0013
FH-GS-2.1	Slaughter house slaughtering equipment for Henan Fenghua Breeding Share Co., Ltd.	1,600,000.00	1,491,748.99	10,676,000.00	1,491,748.99	10,676,000.00	ICB	Q4/2018	2019/9/5	02/100%/0016
HTR-CW-1	Dairy farm and supporting facilities for Henan Hengtianran Pasture Farming Co., Ltd.	9,636,800.00	9,856,261.12	69,660,111.06	3,843,941.84	27,167,443.31	NCB	Q3/2019	2019/10/17	01E/39%/0017
HTR-GS-2	Fattening equipment and cattle car for Henan Hengtianran	768,600.00	671,515.08	4,746,000.00	671,515.08	4,746,000.00	NCB	Q3/2019	2019/10/17	02/100%/0018

	Pasture Farming Co., Ltd.									
AHB-GS-4	Air conditioning and fire control system	327,868.85		2,175,308.10	327,868.85	2,175,308.10	NCB	Q3/2019	2020/1/20	02/100%/0019
DD-GS-1	Farming and organic fertilizer processing equipment for Henan Dadi Animal Husbandry Co., Ltd.	4,419,704.92		27,937,895.00	4,048,970.29	27,937,895.00	ICB	Q4/2019	2020/3/26	02/100%/0021
FH-CW-1	Slaughter house for Henan Fenghua Breeding Share Co., Ltd.	3,728,479.51		34,233,925.26	1,786,117.84	12,324,213.09	NCB	Q3/2019	2020/4/28	01/36%/0022
AHB-GS-5-01	Lot 1: Analytical Instrument	1,251,485.15		5,796,600.00	840,086.96	5,796,600.00	NCB	Q1/2020	2020/5/8	02/100%/0023
AHB-GS-5-02	Lot 2: Pretreatment instrument	470,555.74		2,680,000.00	388,405.80	2,680,000.00	NCB	Q4/2019	2020/5/8	02/100%/0024
AHB-GS-5-03	Lot 3: Laboratory equipment of labs for county(city) level center	885,216.76		4,096,600.00	593,710.14	4,096,600.00	NCB	Q4/2019	2020/5/8	02/100%/0025
DD-CW-1	Pig fattening farm for Henan Dadi Animal Husbandry Co., Ltd.	6,136,967.21		43,535,620.87	2,649,994.31	18,284,960.77	NCB	Q1/2020	2020/5/15	01/42%/0026
AHB-GS-2	Supervision and sampling car (with cold-chain facilities)	268,852.46		1,148,000.00		1,148,000.00	NCB	Q1/2020	2020/7/10	02/100%/
FH-GS-2.2	Slaughter house refrigeration equipment for Henan Fenghua Breeding Share Co., Ltd.	2,400,000.00		14,662,840.07		14,662,840.07	ICB	Q2/2020	2020/5/28	02/100%/0027
SG-CW-2	Feed processing plant for Henan Sangao Agriculture and Animal Husbandry Co., Ltd.	2,088,235.29		14,200,000.00		10,650,000.00	NCB	Q3/2020	2020/10/19	011/75%/0029

DD-GS-2	Vehicle for Pig Transportation for Henan Dadi Animal Husbandry Co., Ltd.	424,718.62		3,160,000.00		3,160,000.00	NCB	Q2/2020	2020/9/3	02/100%/0028
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Consulting Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
None							

D. Non-ADB Financing

The following table lists goods, works and consulting services contracts over the life of the project, financed by Non-ADB sources.

Consulting Services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Comments

E. National Competitive Bidding

A. Regulation and Reference Documents

51. The procedures to be followed for national competitive bidding shall be those set forth in *The Government Procurement Law of People's Republic of China* approved on 29 June 2002 and *Law of the People's Republic of China on Bid Invitation and Bidding of the People's Republic of China* promulgated on August 30, 1999 with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the ADB Procurement Guidelines.

B. Procurement Procedures

a) Competitive Bidding Procedure (Procurement Law Art. 26 and Law on Bidding Art. 10).

1). Public tendering is the acceptable method of government procurement, and public invitation is the accepted bid invitation mode.

b). Eligibility

2). The eligibility of bidders shall be as defined under section I of the Procurement Guidelines; accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in section I of the Guidelines, as amended from time to time.

c). Advertising

3. All invitations to prequalify or to bid shall be advertised in the national press (China Daily Newspaper) or a free and open access website (www.chinabidding.com). Such advertisement

shall be made in sufficient time for prospective bidders to obtain prequalification or bidding documents and prepare and submit their responses. In any event, a minimum preparation period of twenty-eight (28) days shall be given. The preparation period shall count (a) from the date of advertisement, or (b) when the documents are available for issue, whichever date is later. The advertisement and the prequalification and bidding documents shall specify the deadline for such submission.

d) . Bidding Period

4. The minimum bidding period is 28 days prior to the deadline for the submission of bids.

e) . Participation by Government-Owned Enterprises

5. Government owned enterprises in the Borrower's country may be permitted to bid if they can establish that they (a) are legally and financially autonomous, (b) operate under commercial law and (c) are not a dependent agency of the Borrower/Project Executing Agency.

f) Rebidding

6. Re-bidding shall not be allowed solely because the number of bids is less than three (3).

c. Bidding Documents

g) Qualification requirements

7. Qualification requirements of bidders and the method of evaluating the qualification of each bidder shall be specified in detail in the bidding documents, and in the prequalification documents if the bidding is preceded by a prequalification process.

h) Bid Submission and Opening

8. Bidders shall be allowed to submit bids by mail or by hand.
9. All bids shall be opened in public; all bidders shall be afforded an opportunity to be present (either in person or through their representatives) at the time of bid opening, but bidders shall not be required to be present at the bid opening.

i) Bid Evaluation and Award

10. No bid may be rejected solely on the basis that the bid price falls outside any standard contract estimate, or margin or bracket of average bids established by the Borrower/Project Executing Agency.
11. Each contract shall be awarded to the lowest evaluated responsive bidder, that is, the bidder who meets the appropriate standards of capability and resources and whose bid has been determined (a) to be substantially responsive to the bidding documents and (b) to offer the lowest evaluated cost. The winning bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted.

j) ADB Policy Clauses

12. Each contract financed with the proceeds of the Loan shall provide that the suppliers and contractors shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors

appointed by ADB.

13. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.

14. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in executing, ADB-financed contract.

VII. SAFEGUARDS

52. Pursuant to ADB's Safeguard Policy Statement (2009, SPS),³⁸ ADB funds may not be applied to the activities described on ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS.

A. Environment

53. The project is classified as “category B” for environment. An initial environmental examination (IEE) and EMP were prepared, and are consistent with the requirements of ADB's SPS (2009, footnote 32). The IEE incorporates the results of the domestic environmental impact assessment (EIA) reports approved by the Henan Provincial Department of Environmental Protection in 2013–2014. Consultations to raise public awareness of the project and receive stakeholder's inputs to project design were conducted with communities and local government agencies. The conclusions and recommendations of the environmental assessments and consultations were integrated in the project design.

54. The IEE forms the basis of the official loan agreement between ADB and HPG. Environmental safeguard management for the project will be implemented on the basis of the EMP in the IEE. It includes impact mitigation measures, an environmental monitoring program, grievance redress mechanism (GRM), and public consultation plan. It is the principal document to be used by the government and contractors to avoid, mitigate, monitor, and report the environmental impacts of project construction and operation. HPG, through the PMO, will be responsible for the EMP implementation and compliance, including inspection, monitoring, reporting, and initiating corrective actions or measures. The PMO will have final responsibility for implementation of the GRM for handling any disputes. The IEE focuses mainly on project output 2. This output comprises eight PPEs (Afanti, Dadi, Donghan, Fenghua, Hengtianran, Kerchin, Muyuan, Niuniu, and Sangao PPEs) engaged in intensive livestock production and processing in seven counties of six cities across Henan Province.

55. The project is expected to achieve environmental benefits, including improved management and recycling of livestock solid waste and wastewater, increased efficiency in the use of water and energy, reduced pressures on surface and groundwater, improved health and safety of workers and consumers of livestock products, and improved monitoring of environmental resource use and veterinary products. Potential construction impacts include localized and short term air and water pollution, noise and vibration, fugitive dust, soil erosion, solid waste disposal, interference with traffic and municipal facilities, and occupational and community health and safety. These impacts will be avoided and/or mitigated through full implementation of the EMP. Potential operational impacts are groundwater pollution from the PPE waste (to be avoided by appropriate site containment measures), solid waste disposal (to be treated and recycled), operational odor and noise (negated by the 500-meter buffer zone around the PPEs), regulated re-use of treated wastewater for farm land, based on compatibility with crop type, and sustainability of groundwater use for the PPE operations. The status of groundwater aquifers utilized by the PPEs will be monitored during a long-term monitoring of key natural resource variables throughout the life of project operations. The IEE concludes that full and effective implementation of the EMP, together with the prescribed capacity training, will result in minor

³⁸ Available at: <http://www.adb.org/documents/safeguard-policy-statement>

residual impacts which are within the limits of the PRC standards defined in the EMP. Mitigation measures are detailed in the project EMP.

56. Public consultation and GRM. Information disclosure and two rounds of public consultations with the key stakeholders, including the representatives of the affected persons and local village committees, was conducted during the IEE in accordance with the PRC's Guideline on Public Consultation in EIA (2006) and the SPS. Over 650 people were consulted. Public concerns about air and water pollution from PPE operation were documented and have been addressed in the project design. In compliance with the SPS, a GRM has been established to receive and manage any community concerns which may arise due to the project. The PMO is the lead agency responsible for overall management, implementation, and reporting of the GRM. The PMO environmental and social officers will coordinate the GRM and: (i) instruct the PPEs, local environmental protection bureaus (EPB), and contractors on their responsibilities in the GRM; (ii) establish a simple registry system to document and track grievances received (including forms to record complaints and how they have been resolved); and (iii) report on progress of the GRM in the quarterly project progress reports and the semiannual environmental and social safeguards monitoring reports to ADB. The GRM procedures, reporting timelines, roles and responsibilities of all agencies, and GRM contact persons in each PPE, are described in section G of the EMP.

57. Environmental management plan. The EMP was developed during the IEE and defines impacts and mitigation measures for the phases of detailed design, construction, and operation, as well as a monitoring program, reporting, institutional responsibilities, training plan, and budget (Annex 5 of the PAM). The EMP will be implemented until project completion, except for the monitoring of potential operational-phase impacts, which will start upon the physical completion of each project component and be implemented for 12 months after the date of physical completion of the overall project. HPG is responsible for the implementation of, and compliance with, the EMP. If necessary, ADB and HPG, through mutual agreement, will update the EMP based on the detailed final project designs. During the final design stage, the PMO will provide the EMP to the design institutes to incorporate the mitigation measures into the detailed designs. Particular attention will be given to: (i) the re-use of biogas slurry as liquid fertilizer for crops; (ii) the protection of surface and groundwater from waste or wastewater; and environmental monitoring as described in the EMP. In addition to the EMP monitoring program, a program to measure the environmental sustainability of project output 2 will be conducted. This is separate from environment safeguards and is not part of the EMP (Section VIII), which is described in Annex 3.

58. The final updated EMP following detailed technical design will be reposted on the ADB website. A full-time environmental officer has been assigned in the PMO to coordinate implementation of the EMP. The effectiveness of mitigation measures will be evaluated through environmental inspections and monitoring. The construction contractors and supervision companies will incorporate the EMP mitigation measures into their construction plans and will be responsible for internal environmental monitoring during construction. To ensure that contractors comply with the EMP, the PMO will prepare and provide the following for incorporation into the bidding documents: (i) a list of environmental management requirements to be budgeted by bidders in their proposals, (ii) environmental clauses for contractual terms and conditions, and (iii) full domestic EIAs and project EMP for compliance. Contractors will be responsible for implementing mitigation measures during construction, supervised by the PMO and implementing agencies. The PPEs will be responsible for implementing the EMP, and environmental sustainability monitoring, during operation overseen by the PMO.

59. **Training.** The institutional capacity of the PMO, the implementing agencies, and the PPEs to implement the EMP and ensure compliance with the SPS is weak; and the project includes a capacity development program. The PMO environment and social officers will be included in the training. This will impart an understanding of the goals, methods, and practices of project environmental management. Capacity development will be provided through workshops and on-the-job training, and will supplement training given in the PPTA phase. Training will cover all aspects of the EMP, particularly the GRM, impact monitoring, environmental sustainability monitoring, and reporting (Tables A1.4–7 in EMP). Training will be facilitated by the LIC (Section F of the EMP).

B. Resettlement and Land Leases

60. The project is classified as category B in terms of involuntary resettlement. For one PPE, three households need to be relocated to fulfill environmental zoning requirements.³⁹ The cost of house demolition and relocation will be paid by the PPE at market value. A resettlement plan was prepared, including a GRM. The resettlement will be monitored, and annual resettlement reports will be prepared by an external monitoring agency as per resettlement plan.

61. For the project, seven PPEs made commercial land lease contracts over the total area of 2019.9 mu (134.66 hectares) with 7 villages representing 406 land user households with a total of 1,718 affected people.⁴⁰ Due diligence has been conducted to ensure that these contracts (i) are legal following the PRC laws and requirements, and (ii) that parties signed the contracts voluntarily, with consultation conducted taking into account information inequalities, that lease prices are fair acceptable, and that expropriation was no possible outcome of the negotiations. Due diligence was conducted by a third party engaged during the project preparation.

C. Indigenous Peoples

62. The project is classified as category C for indigenous peoples. The assessment conducted during the project preparation found that no ethnic minority groups in the past or are in the present residing in townships and villages impacted upon by the project.

VIII. GENDER AND SOCIAL DIMENSIONS

63. A social, poverty, and gender analysis was undertaken in accordance with ADB's policies on Gender and Development in ADB Operations (Operations Manual Section C2), and Incorporation of Social Dimensions into ADB Operations (Operations Manual Section C3). The analysis collected information to assist in the design of the project by identifying the poor, examining causes of poverty, and recommending poverty reduction measures within the project scope.

64. **Social and poverty dimensions.** A poverty and social assessment that included a household survey, community, and focus group discussions, and key informant interviews, was conducted during project preparation. The incidence of poverty among households impacted upon by this project is 21.5% based on the PRC's current poverty income line of CNY2,300 per person per annum according to the analysis of household income and expenditure undertaken by the

³⁹ Households are not allowed to reside within 500-meter radius from agro-processing plant according to the PRC's environmental regulations.

⁴⁰ Three PPEs have state-owned industrial land with a total area of 191.3 mu, among them, Fenghua is 40 mu, Yuyuan Meat is 74 Mu and Sangao is 77.3 mu.

PPTA. Households living in extreme poverty and receiving local country support constitute 1.6% of households and another 2.7% of households are considered socially vulnerable because of physical or intellectual disabilities.

65. Improved food safety will benefit millions of people in the PRC as well as consumers overseas. The project will benefit the livelihoods of 15,110 households in eight counties in Henan through employment generation from the PPEs' value chains such as youngstock suppliers, and fodder and feed crop suppliers. Among those beneficiaries, 1,526 employees, of which 40% are female, will be hired directly by the PPEs. It is expected that about a half of those beneficiaries are from poor and vulnerable households. There will be little impact on smallholder livestock producers as the PPEs' target markets do not overlap with local markets where smallholders sell their livestock and meat products. Besides, the project assumes supply shortage of livestock and its products at local and national levels; hence, the project activities will neither crowd out smallholder livestock producers, nor widen the income inequality.

66. **Gender dimension.** The project is categorized as effective gender mainstreaming and anticipated to benefit about 13,900 women from their involvement in on-farm activities and off-farm based waged employment opportunities provided by the increased production and processing of the PPEs. Female staff of the PPEs and government agencies will be trained in (i) livestock product quality and safety monitoring and testing systems; and (ii) environmentally sustainable livestock production and processing. Women staff members of government agencies will also be provided with capacity strengthening in (i) project management and monitoring, (ii) safeguards, and (iii) procurement and financial management.

67. **Gender action plan.** The gender action plan (GAP, Table 5) was prepared jointly by the PMO and the participating local governments, with the assistance of the PPTA social and gender specialists. The purpose of GAP is to ensure that salient gender issues are addressed during the project implementation, and its implementation mitigates likely negative impacts and enhances project benefits for women. The GAP will ensure suitable avenues will be available for participation of women, and it includes realistic measures for maximizing their participation in local decision-making. Additionally, the GAP will put in place measures to mitigate and possible negative impacts and reduce risks associated with the project support for each of the PPEs. The table below provides details of the GAP, including target indicators and responsibilities indicators.

68. **Institutional responsibilities and monitoring.** The PMO will support and assist the implementing agencies in the implementation and internal monitoring of the GAP. The PIC will include one social development specialist. Internal monitoring will be undertaken by the implementing agencies and concerned PMO social and gender specialist and findings will be consolidated in the project's quarterly progress reports

Table VIII.1: Gender Action Plan

Project Output	Gender Actions and Targets/Indicators	Responsibilities
Outcome: Model livestock and meat production with environmental sustainability and product safety demonstrated	Around 12,700 women and 12,700 men directly benefiting from on-farm and off-farm waged employment opportunities provided by the project	Executing and implementing agencies, PMO
Output 1: Safety monitoring and inspection facilities upgraded	Provide male and female employees of the eight PPEs with in-house equipment and training for product quality testing to enable them to mitigate risks for sudden job losses due to disease outbreak and other risks.	PMO, HDARA, MARABs, PPEs
Output 2: Environmentally sustainable production facilities established	<p>Consult farmers involved in the supply chain of the eight PPEs on the detailed project activities and land lease agreements. A total of around 12,000 women will be consulted, and a total of around 5,400 farmers from poor and vulnerable households (including women) from a total of around 13,500 households will be consulted by 2021.</p> <p>Improve environmental and sanitation conditions of male and female farmers in the supply chain through improved feed processing facilities, production facilities, and better animal waste and waste water treatment facilities. <i>(Target: Complete elimination of anthrax and brucellosis; substantial progress towards the elimination of pig cholera and Newcastle disease by 2018)</i></p> <p>By 2021, supplied appropriate livestock and other inputs to at least 20% of 12,700 farming households working in supply chain. This will benefit an estimated 3,800 women in those households.</p> <p>Offer at least 40% of employment opportunities created in the eight PPEs to women <i>(an estimated 575 jobs to be allocated to women of the total 1,437 jobs)</i></p> <p>Reduce the rate of adult male household members undertaking migrant work in households benefitting from project supply chain activities from 55% to 35%, while maintaining continued improvement</p>	<p>Executing and implementing agencies, PPEs, PMO, HPAO, ACWF, and project implementation consultants; to be continued 3 years after project implementation</p> <p>PPEs and village and township authorities</p> <p>PPEs, ACWF, and labor bureau</p> <p>Labor bureau, and local village and township authorities to provide CNY200,000 from counterpart funds</p>

Project Output	Gender Actions and Targets/Indicators	Responsibilities
	in household living standards by Year 2021 (<i>Estimated total number of current male migrants in project households is 11,000</i>)	
Output 3: Capacity strengthening and project management	<p>Ensure PPMS to be fully sex-disaggregated</p> <p>Assign at least one female staff member in each PMO at provincial, municipal, and county levels (<i>Estimated total number of female staff at least 20 of a total staff of 50</i>)</p> <p>At least one female staff member in the monitoring and testing laboratories of the HDARA and PPEs to receive appropriate technical training (Estimated total female beneficiaries: 12 staff)</p> <p>At least one female from each PPE made responsible for products safety and quality control. If no suitably qualified woman, the PPE to undertake training or recruit a qualified woman.</p> <p>Social development consultant to provide training to the PPE and the PMO on GAP implementation and monitoring.</p> <p>Provide at least 30% of minimum 2,000 person-days of relevant government officials and PPE personnel training on project management to women</p> <p>Provide at least 30% of minimum 8,000 person-days of relevant government official and PPE personnel on food safety and sustainable livestock production</p>	<p>PMOs and project implementation consultants</p> <p>PMOs, HDARA</p> <p>HDARA, PPEs</p> <p>PPEs</p> <p>PMO and project implementation consultants</p> <p>PMO and project implementation consultants</p> <p>PMO and project implementation consultants</p>

ACWF = All China Women's Federation, GAP = gender action plan, HDARA = Henan Provincial Department of Agriculture and Rural Affairs, HPAO = Henan Poverty Alleviation Office, MARAB = Municipal Agriculture and Rural Affairs Bureau, PMO = project management office, PPE = project participating enterprise.

Source: Asian Development Bank.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact the Project is Aligned with			
(i) Agricultural industrialization and large-scale operation upgraded (ii) Capacity in ensuring agro-product quality and safety enhanced (iii) Conservation of agricultural resources and ecosystems strengthened (National Modern Agriculture Development Plan, 2011–2015a)			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Model livestock production and processing with improved environmental sustainability and product safety demonstrated	By 2021: a. A livestock product safety monitoring and inspection system established and operational at HDARA, five MARABs, nine CARABs, and eight PPEs (2015 baseline: 0) b. 230,000 heads of pig/year raised at the PPEs' project facilities (2015 baseline: 0) c. 4,000 heads of cattle/year raised at the PPEs' project facilities (2015 baseline: 0) d. 200,000 heads of poultry/year bred at the PPEs' project facilities (2015 baseline: 0) e. 193,400 tons/year of meat produced at the PPE's project facilities (2015 baseline: 0) f. 41,000 tons/year of organic fertilizer produced at the PPEs' project facilities (2015 baseline: 0) g. More than 1,000 tCO ₂ e/year of GHG emission from biogas plant operation avoided (2015 baseline: 0)	a–g Project progress reports and environmental safeguard monitoring reports	The PPEs' project implementation is hampered due to poor financial performance, adverse market situations, animal diseases, and/or difficulty in maintaining land lease contracts.
Output 1 Livestock product safety monitoring and inspection facilities upgraded	1a. HDARA laboratory increased sample testing to 30,000 batches/year by 2021 (2015 baseline: 20,000 batches/year) 1b. 5 MARAB laboratories CMA- and CATL certified by 2021 (2015 baseline: 1 MARAB laboratory) 1c. Nine CARABs equipped with laboratories by 2021 (2015 baseline: One CARAB) 1d. Eight PPEs established, with well-equipped in-house testing facilities for feed and livestock products by 2021 (2015 baseline: 0)	1a. HAHB annual reports 1b. CMA and CATL certificates 1c–e. Project progress reports	Exclusion of relevant personnel from training causes inefficient use of facilities and equipment provided by the project. Limited financial management capacity of the PPEs causes delays in withdrawing the ADB loan proceeds, resulting in delays in disbursement and

	1e. HDARA, five MARABs, nine CARABs, and eight PPEs equipped with computer system to support livestock product safety monitoring and inspection system by 2021 (2015 baseline: 0)		project implementation.
Output 2 Environmentally sustainable livestock production facilities established	<p>2a. All livestock and processing wastes from the PPEs' project facilities treated from the start of operation by 2021(2015 baseline: 0)</p> <p>2b. All wastewater produced from the PPE's project facilities meets the appropriate PRC standards by the start of their operation by 2021(2015 baseline: 0)</p> <p>2c. Water use per head of livestock is 20% less than the existing PPE facilities of the same livestock type (2015 baseline: 0%)</p> <p>2d. 1,400 additional employment opportunities, of which at least 40% (560) are for women, generated by the PPEs by 2021(2015 baseline: 0, at least 0% for women)</p>	2a–e. Project progress reports and environmental safeguard monitoring reports	Declined profitability reduces the PPE's interests in operating waste and wastewater treatment plants. Limited financial management capacity of the PPEs causes delays in withdrawing the ADB loan proceeds, thus resulting also in delays in disbursement and project implementation.
Output 3 Capacity and project management strengthened	<p>3a. At least 2,000 person-days of training on project management conducted for relevant government officials and the PPE personnel, of which at least 30% are female, by 2021 (2015 baseline: 0, at least 0% female)</p> <p>3b. At least 8,000 person-days of training on food safety and sustainable livestock production conducted for relevant government officials and the PPE personnel, of which at least 30% are female, by 2021 (2015 baseline: 0, at least 0% female)</p> <p>3c. Eight PPEs (for livestock-rearing segment) certified for ISO 9001 and/ CGAP (2015 baseline: MY, SG and YX certified for ISO 9001, MY certified for CGAP.)</p> <p>3d. Three PPEs (for livestock-processing segment) certified for HACCP and ISO 22000 (2015 baseline: MY certified for ISO 22000).</p>	3a–d Project progress reports	

Key Activities with Milestones

1. Livestock product safety monitoring and inspection facilities upgraded

- 1.1 Upgrade HDARA's laboratory and install testing equipment (Q2 2016– Q3 2021)
- 1.2 Upgrade five MARAB laboratories and install testing equipment (Q2 2016– Q3 2021)
- 1.3 Procure IT equipment and software to establish a lab information management system (Q2 2016– Q3 2021)
- 1.4 Upgrade or establish nine CARAB laboratories and install testing equipment (Q2 2016–Q3 2021)

<p>Key Activities with Milestones</p> <p>1.5 Upgrade or establish the eight PPEs' in-house testing facilities (Q2 2016–Q3 2021)</p> <p>2. Environmentally sustainable livestock production facilities established</p> <p>2.1 Establish production and processing facilities (Q2 2016–Q3 2021)</p> <p>2.2 Establish feed processing facilities (Q2 2016–Q3 2021)</p> <p>2.3 Establish biogas digesters (Q2 2016–Q3 2021)</p> <p>2.4 Establish organic fertilizer processing facilities (Q2 2016–Q3 2021)</p> <p>3. Capacity and project management strengthened</p> <p>3.1 Recruit project implementation consultants (Q2 2016, completed)</p> <p>3.2 Conduct training on project management (Q2 2016–Q3 2021)</p> <p>3.3 Conduct training on product quality and safety control (Q2 2016–Q3 2021)</p> <p>3.4 Conduct training on sustainable livestock production and processing (Q2 2016–Q3 2021)</p> <p>3.5 Establish PPMS, monitor project implementation progress, and submit quarterly project progress reports to ADB (Q2 2016–Q3 2021)</p> <p>3.6 Implement the environmental management plan, and submit semiannual environmental safeguard monitoring reports to ADB (Q2 2016–Q3 2021)</p> <p>3.7 Implement the resettlement plan and gender action plan; and submit semiannual social safeguard monitoring reports to ADB (Q2 2016–Q3 2021)</p>
<p>Inputs</p> <p>ADB loan: \$69,000,000</p> <p>HPG: \$1,110,000</p> <p>PPEs \$71,100,000</p>
<p>Assumptions for Partner Financing</p> <p>Not Applicable.</p> <p>ADB = Asian Development Bank, CARAB = County Agriculture and Rural Affairs Bureau, CATL = China Agri-Product Testing Laboratory, CGAP = China Good Agricultural Practices, CMA = China Metrology Accreditation, GHG = greenhouse gas, HACCP = hazard analysis and critical control point, HDARA = Henan Provincial Department of Agriculture and Rural Affairs, HPG = Henan provincial organization, ISO = International Organization for Standardization, IT = information technology, MARAB = Municipal Agriculture and Rural Affairs Bureau, PPE = project participating enterprise, PPMS = project performance management system, PRC = People's Republic of China, tCO₂e = ton of carbon dioxide equivalent.</p> <p>^a Government of the People's Republic of China, Ministry of Agriculture. 2013. National Modern Agriculture Development Plan, 2011–2015. Beijing.</p> <p>Source: Asian Development Bank.</p>

B. Monitoring

1. Project Performance Monitoring

69. To monitor the progress of the project in achieving the planned outcome and outputs, the PMO will establish and maintain a project performance management system (PPMS), which will be designed to permit adequate flexibility to adopt remedial action regarding project design, schedules, activities, and development impacts.⁴¹ The PPMS will cover the following aspects of the project implementation: (i) project physical and financial progress, (ii) results of capacity development program, (iii) livestock products monitoring and inspection system establishment, employment impact, (v) implementation of environment safeguards and environmental sustainability monitoring program, and (vi) social safeguards and GAP, and compliance with loan covenants (policy, financial, economic, sector, and others).

70. Disaggregated baseline data for output and outcome indicators gathered during project preparation will be updated and reported quarterly through quarterly project progress reports and after each ADB review mission. These quarterly progress reports will provide information necessary to update ADB's PPMS. At the start of project implementation, the PMO and the implementing agencies will develop integrated PPMS procedures to generate data systematically on the inputs and outputs, as well as the indicators to be used to measure the project's impact and outcome taking into account the project scope.

71. The PMO will be responsible for monitoring and reporting on project performance. The basis for project performance monitoring will be the design and monitoring framework (DMF), which identifies performance targets for the impact, outcomes, and outputs of the project. The PMO will collect the data, calculate the indicators, analyze the results, and prepare a brief report describing the extent to which the project is generating the intended outputs and outcomes. The PMO and the implementing agencies agreed and confirmed that they will (i) establish the PPMS framework at the start of project implementation; (ii) confirm that targets are achievable; (iii) develop recording, monitoring, and reporting arrangements; and (iv) establish systems and procedures no later than 6 months after project inception.

2. Environmental Safeguard Monitoring

72. Three types of environmental safeguard monitoring will be conducted under the EMP: (i) compliance monitoring, which documents overall procedural compliance of the project with the EMP, including all required tasks of mitigation, monitoring, and reporting (to be conducted by project implementation consultant); (ii) internal monitoring, which is the management of construction activities and quantitative measurement of selected environmental variables (to be conducted by the PPEs and their construction contractors); and (iii) external monitoring, which is the quantitative measurement of selected environmental variables at and near construction sites to ensure compliance with regulatory standards (to be conducted by the county environment monitoring stations; EMS). The environmental monitoring program, including roles, responsibilities, monitoring frequency and variables, is described in section D of the EMP. ADB and the PMO will monitor the status of the EMP implementation through (i) the PMO's quarterly project progress reports and semiannual environmental safeguard monitoring reports to ADB, (ii)

⁴¹ ADB's project performance management system is available at: <http://www.adb.org/countries/prc/project-learning-resources>

reports by the project implementation consultant to the PMO and ADB, (iii) review missions. EMP implementation will be coordinated by the PMO environment officer, supported by the PMO, HEPD, project municipal and county EPBs, and PIC to ensure overall compliance of all relevant agencies with the EMP.

73. Project readiness inspection. Before construction, the LIEC will assess each PPE's readiness in terms of environmental management based on a set of indicators (Table A1.3 in EMP) and report it to ADB and the PMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met.

74. Environmental acceptance reports. Following the PRC Regulation on Project Completion Environmental Audit (Ministry of Environmental Protection, 2001), within 3 months after the completion of each subproject, an environmental acceptance monitoring and audit report for the component shall be prepared by a licensed environmental monitoring institute. The report will be reviewed and approved by HEPD, and then reported to ADB (Table A1.6 in the EMP). The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

3. Social Safeguard Monitoring

75. Internal and external monitoring of implementation of the resettlement plan will be conducted. Monitoring methodologies are specified in the resettlement plan. Internal supervision and monitoring of implementation of resettlement plan will be conducted by the implementing agencies to ensure compliance with the provisions of the resettlement plan. To ensure that affected persons have been adequately compensated and rehabilitated, the implementing agencies will keep ADB informed of the progress in implementing the resettlement plans through quarterly project progress reports through the PMO until resettlement is completed. The LIC, an independent monitoring party, will assist the PMO in monitoring and reporting resettlement plan implementation semiannually and annual evaluation of resettlement results for 2 years after the completion of resettlement.

4. Gender Action Plan Implementation and Social Monitoring

76. Comprehensive monitoring will be conducted during project implementation to ensure that the project will fulfill its aims and objectives, including the implementation of the land lease arrangements. The implementing agencies will be responsible for establishing and coordinating monitoring and evaluation. The PMO will be responsible for the monitoring and evaluation, and for reporting to ADB twice each year through Q2 and Q4 project progress reports of year during project implementation. The ADB staff with expertise in gender issues will participate in the midterm review. The PIC will work with the PMO and the implementing agency staff to create a detailed implementation and monitoring plan for each of the tasks outlined, help to complete the GAP implementation reports.

C. Evaluation

77. In addition to regular monitoring, project performance will be reviewed at least once a year jointly by ADB and HPG. The review will assess implementation performance and achievement of project outcomes and outputs, assess financial progress, identify issues and constraints affecting implementation, and work out a time-bound action plan for their resolution. ADB will undertake annual project reviews during the project period. Additionally, ADB and HPG will undertake a midterm review of the project in 2019, covering all institutional, administrative, organizational, technical, environmental, social, poverty reduction, economic, financial, procurement, and other relevant aspects that may have an impact on the performance of the project and its continuing viability. The review will (i) examine the progress in implementing project outputs; (ii) evaluate environment, social, and poverty impact; (iii) ensure compliance with assurances in the loan agreement; and (iv) evaluate effectiveness of the procurement implementation activities of the executing agency and tendering company using procurement review for effective implementation evaluation. The review shall also undertake a comprehensive review of potential loan savings, identify areas for reallocation of loan proceeds, and change disbursement percentages, as appropriate. Within 6 months of physical completion of the project, HPG will submit a project completion report to ADB⁴².

D. Reporting

78. HPG will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) updated procurement plan and updated implementation plan for the next 12 months during the annual review missions; and (iii) a project completion report within 6 months of physical completion of the project. To ensure projects continue to be both viable and sustainable, project accounts and the executing agency audited financial statements (AFS), together with the associated auditor's annual report, should be adequately reviewed.

79. HPG has agreed on the following reporting commitments:

Report	Timing	Reference
Quarterly project progress reports	Quarterly, within 1 month after the end of each quarter (April, July, October, January)	Project agreement, schedule
Audited financial statements	Not later than 6 months after the closure of fiscal year	Project agreement, schedule
Social safeguard: ➤ Social safeguard monitoring reports ➤ Social safeguard completion report	Semiannually, within 1 month after the end of half year (July, January) Within 3 months after completion of land acquisition and resettlement	Project agreement, schedule
Gender action plan (GAP): ➤ GAP implementation reports	Semiannually, within 1 month after the end of half year (July, January) Semiannually, within 1	Project agreement, schedule

⁴² Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

	month after the end of half year (July, January)	
Environmental safeguard Construction phase <ul style="list-style-type: none"> ➤ Environmental safeguard monitoring reports ➤ Environmental acceptance reports Operations phase	Semiannually, within 1 month after the end of half year (July, January) Within 3 months after each subproject completion	Project agreement, schedule
Project completion report	Not later than 3 months after the physical completion of the project	Project agreement, schedule

E. Stakeholder Communication Strategy

80. Project information will be communicated through public consultation, information disclosure mechanism in ADB's and the government's website, meetings, interviews, focus group discussions, and community consultation meetings, in accordance with ADB's requirements of information disclosure policy. Extensive consultation will take place on aspects of infrastructure design and design of nonstructural measures such as awareness raising campaigns, with institutional stakeholders, beneficiaries, and affected persons. In the consultative meetings, participants, including male, female, and poor and vulnerable residents and other significant stakeholders will be consulted about concerns or complaints raising mechanisms, information needs, and further consultation expectations.

81. Consultations with communities have taken place at different points in the preparation of the GAP within the components, and have been designed not only to inform people about the component or specific activities related to its preparation and implementation, but also to enable people in the community to ask questions, make suggestions, state preferences, and express concerns. Further consultation will be conducted during GAP implementation. Special attention will be paid to the participation of women and any other vulnerable groups, such as the poor.

Table IX.1: Stakeholders Communication Strategy

Objectives	Key Roles/Challenges	Main Stakeholders	Messages	Means of Communication	Timeline	Responsibility	Resources
Ensure a regular flow of reliable project information	<p>Information about proposed investments of the PPEs</p> <p>Participatory and transparent processes associated with safeguards impacts</p> <p>Impacts of long-term leasing agreements</p> <p>Local people informed of project related income generation opportunities</p>	<p>Farmers leasing land to the PPEs</p> <p>Farmers participating in value chains of the PPEs</p> <p>PPEs, their investors, and employees</p> <p>Local village and township authorities</p> <p>County ARAB officials</p> <p>Project towns radio and television</p> <p>HDARA</p> <p>HPG</p> <p>MOA, Beijing</p> <p>ADB</p>	<p>Official policy is to promote larger- scale livestock raising</p> <p>Leasing out land use rights can be managed to ensure higher household income</p> <p>Participation in the PPE value chain should increase income from livestock raising of participants</p> <p>PPEs creating waged employment locally will mean less need for migration and also opportunities for poorer and more vulnerable persons</p> <p>Livestock disease epidemics better managed</p>	<p>Household dissemination facilitated by the PPEs, local village and township authorities</p> <p>Media outreach via local television, radio, newspapers and social media</p> <p>Print materials including posters prepared for the project by the PPEs and ARAB</p>	<p>From outset of project:</p> <p>Regularly scheduled events in local media</p> <p>Local markets and other public places, especially during the Spring Festival when migrant workers return home</p>	<p>Project designated unit within the PPEs</p> <p>Local village and township authorities</p> <p>County ARAB officials</p>	<p>Content development and publication and dissemination costs to be borne by the PPEs</p> <p>Essentially the time and resources required of the PPEs should be conceived as an integrated approach to improved levels of corporate social responsibility</p>

Objectives	Key Roles/ Challenges	Main Stakeholders	Messages	Means of Communication	Timeline	Responsibility	Resources
Establish two-way information sharing/ dialogue mechanism	Identifying community focal points that are acceptable to other community members Timing at times that are convenient to poor and vulnerable households, especially women rather than at the convenience of the PPEs, local authorities or ARAB Use of information readily understood by targeted groups (simple and clear criteria)	Farmers leasing land to the PPEs Farmers participating in value chains of the PPEs PPEs, their investors and employees Local village and township authorities County ARAB officials Project towns radio and television HDARA HPG MOA, Beijing ADB	Incorporate stakeholders' views into project Explain how views of local stakeholders will be considered and integrated with overall project concerns Identification of additional key issues that might have been overlooked during TA	The PPEs will need to embrace outreach approaches to target local stakeholders Local Village and township authorities ensure all stakeholders are actively consulted and informed Multi stakeholder advisory groups established consisting of project affected persons, local village, township and country authorities, senior management of PPEs and relevant Henan provincial authorities	From outset of project: Regularly scheduled events in local media Local markets and other public places, especially during the Spring Festival when migrant workers return home	Project designated unit within the PPEs Local village and township authorities County ARAB officials	Content development and publication and dissemination costs to be borne by the PPEs Essentially the time and resources required of the PPEs should be conceived as an integrated approach to improved levels of corporate social responsibility

ADB = Asian Development Bank, ARAB = Agriculture and Rural Affairs Bureau, HDARA = Henan Provincial Department of Agriculture and Rural Affairs, HPG = Henan provincial government, MOA = Ministry of Agriculture, PPE = project participating enterprise, TA = technical assistance.
Source: ADB.

X. ANTICORRUPTION POLICY

82. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.⁴³ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all Project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.⁴⁴

83. To support these efforts, relevant provisions are included in the loan and project agreements and the bidding documents for the project. The project design and implementation arrangements provide for mitigating corruption risks. Risks associated with project management will be mitigated by (i) training of the executing and implementing agencies' staff in the procurement of civil works, goods, and services under the project; and (ii) periodic inspection of contractors' activities related to fund withdrawals and settlements by the executing agency's staff.

XI. ACCOUNTABILITY MECHANISM

84. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an inde

adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department (in this case ADB's East Asia Department— Environment, Natural Resources, and Agriculture Division). Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.⁴⁵

XII. RECORD OF PAM CHANGES

85. All revisions/updates during the course of implementation will be retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.

No.	Description of Revision	Date
1	Initial draft for discussion prepared	April 2014
2	Discussed during loan fact-finding mission	July 2014
3	Discussed and agreed during loan negotiations	July 2015
4	Updating according to approval of minor scope change Discussed and agreed	April 2021

⁴³ Available at: <https://www.adb.org/documents/anticorruption-policy>

⁴⁴ ADB's Integrity Office web site is available at: <https://www.adb.org/who-we-are/integrity/main>

⁴⁵ For further information see: <https://www.adb.org/who-we-are/accountability-mechanism/main>

ANNEX 1: TRAINING PROGRAM

Topic		Purpose	Expected Participants	Number of Person-Days							Financier
				Total	2016	2017	2018	2019	2020	2021	
	Training on Food Safety										
Testing technology on quality and safety of livestock products		To build testing capacity on main indicators of quality and safety for livestock products and feeds. Topics will include (i) testing techniques on drug residues; microorganisms, heavy metals, microtoxin, etc.; (ii) operating techniques for newly procured equipment; and (iii) new testing techniques, standards, and methods of analysis.	HDARA, MARABs, CARABs, and the PPEs	1,000	150	150	150	150	200	200	ADB
Management of laboratories for livestock product quality and safety inspection		To improve the quality management and risk management capacity of the laboratories for livestock product quality and safety inspection. Topics will include (i) livestock product quality and safety risk management; and (ii) inspection capacity and quality management of labs in HDARA, MARABs, and CARABs.	HDARA, MARABs, and CARABs (management staff of inspection institutions)	720	0	150	150	150	150	120	ADB
Livestock product quality and safety laws and regulations, technical regulations, and safety management systems		To improve the internal quality control and safety management systems in the PPEs and enforcement of laws and regulations in HDARA, MARABs, and CARABs. Topics will include (i) laws and regulations related to livestock products quality and safety; (ii) standards of pollution-free livestock products and related technical regulations; and (iii) establishment and implementation of quality control and safety management mechanism and systems in enterprises, e.g., HACCP, ISO 9001.	HDARA, MARABs, and CARABs and the PPEs	1,330	266	264	200	200	200	200	ADB
Livestock product quality and safety supervision, information, and traceability management system		To enable supervision and administrative authorities timely access the enterprises' information regarding production and product quality and safety to monitor and response to safety incidents in a timely manner. Training in operation of integrated livestock information platform and traceability management system will be provided.	HDARA, MARABs, CARABs, and the PPEs	600	150	0	150	100	100	100	ADB
Subtotal—Training on Food Safety				3,650	566	564	650	600	650	620	
	Training on Environmentally Sustainable Livestock Production and Processing										
Biogas and livestock waste management		To ensure effective and efficient installation and operation of the waste treatment facilities. Topics will include (i) technical design, equipment, and operational management; (ii) utilization of biogas and biogas residues; and (iii) quality standards for biogas slurry and residue digestate and wastewater	CARABs, CEPBs, and the PPEs	1100	180	180	180	180	200	180	ADB

Topic	Purpose	Expected Participants	Number of Person-Days							Financier
			Total	2016	2017	2018	2019	2020	2021	
	discharge standards.									
Wastewater management	To ensure effective and efficient installation and operation of the wastewater management and treatment facilities. Topics will include (i) technical design, equipment, and operational management; (ii) maintenance of equipment and facilities; and (iii) use of and quality standards for discharge of wastewater.	CARABs, CEPBs, and the PPEs	600	100	100	100	100	100	100	HPG
SOP for environmentally sustainable livestock production and processing	To improve understanding about what SOPs are and how they can be used to promote efficient production and processing systems that ensure quality and standards can be met. Topics will include (i) SOPs and preparing SOPs; (ii) integrating new SOPs into business operations; and (iii) how to train others about SOPs on operators' roles and responsibilities.	CARABs and the PPEs	550	90	90	90	90	90	90	HPG
Water and energy saving for livestock production	To (i) provide knowledge about and options for the PPEs to upgrade and improve practices for livestock farming to integrate water and energy saving technologies and practices into their operations; and (ii) strengthen capacity of the PPEs to implement the sustainability monitoring program: objectives, methods, procedures, and reporting.	CARABs, CEPBs, and the PPEs	750	120	120	120	120	150	120	HPG
Water and energy saving for livestock processing	To provide knowledge about and options for PPEs to upgrade and improve practices for livestock product processing to integrate water and energy saving technologies and practices into their operations.	CARABs, CEPBs, and the PPEs	600	100	100	100	100	100	100	HPG
Disease prevention and bio- security	To improve understanding about animal health issues. Topics will include (i) importance of animal health, what biosecurity is, and how it can prevent diseases; (ii) the biosecurity system: best practices from production to processing and SOPs; and (iii) herd health management systems.	CARABs and the PPEs	750	120	120	120	120	150	120	HPG
Animal welfare	To improve understanding and awareness about animal welfare issues. Topics will include (i) importance of and standards for animal welfare and how it links to product quality and safety; (ii) improved livestock handling and processing practices; and (iii) updating SOPs for improved animal welfare.	CARABs and PPEs	750	120	120	120	120	150	120	HPG
Subtotal—Training on Environmentally Sustainable Livestock Production and Processing			5,100	830	830	830	830	950	830	
	Training on Project Implementation									
Procurement	To improve capacity to fulfill procurement management responsibility for the project. Topics will include bidding document preparation, bid evaluation,	PPMO, MPMOs, CPMOs, HDARA,	1,100	220	220	220	220	120	100	HPG

Topic	Purpose	Expected Participants	Number of Person-Days							Financier
			Total	2016	2017	2018	2019	2020	2021	
	contract award, and contract management in line with ADB's procurement guidelines.	MARABs, CARABs, and PPEs, and procurement agencies								
Financial management	To improve capacity to fulfill the financial management responsibility for the project. Topics will include financial management system and procedures, which covers accounting, auditing, reporting, and internal controls; cashflow management; and preparation of documents for withdrawal, replenishment, and liquidation of the ADB loan proceeds.	HFD, MFBs, CFBs, PPMO, MPMOs, CPMOs, HDARA, MARABs, CARABs, and PPEs	300	60	60	60	60	60	20	HPG
Social and environmental safeguards monitoring and reporting	To improve capacity to fulfill responsibility for social and environmental safeguards and dimensions monitoring and reporting for the project. Topics will include setting up of monitoring and reporting mechanism for EMP, social safeguards, and GAP implementation; data collection methodology; and reporting requirements for ADB and the government.	PPMO, MPMOs, CPMOs, HEPD, MEPBs, CEPBs, and PPEs	600	180	180	90	30	120		HPG
Subtotal—Training on Project Implementation			2,000	460	460	370	310	280	120	
Grant Total			10,750	1,856	1,854	1,850	1,740	1,880	1,570	

ADB = Asian Development Bank, CARAB = County Agriculture and Rural Affairs Bureau, CEPB = county environmental protection bureau, CFB = county finance bureau, CPMO = county project management office, EMP = environmental management plan, GAP = gender action plan, HACCP = hazard analysis and critical control point, HDARA = Henan Provincial Department of Agriculture and Rural Affairs, HEPD = Henan Environmental Protection Department, HFD = Henan Finance Department, ISO = International Organization for Standardization, MARAB = Municipal Agriculture and Rural Affairs Bureau, MEPB = municipal environmental protection bureau, MFB = municipal finance bureau, MPMO = municipal project management office, PPE = project participating enterprise, PPMO = provincial project management office, PPMS = project performance management system, SOP = standard operating procedure.

Source: ADB

ANNEX 2: OUTLINE TERMS OF REFERENCE FOR PROJECT IMPLEMENTATION CONSULTANTS

1. For implementation of the Asian Development Bank (ADB)-financed Henan Sustainable Livestock Farming and Product Safety Demonstration Project, the project management office (PMO) will be assisted by the commissioning of a project implementation consultant (PIC) team, which comprises nine national consultants for 56 person-months (pm), during project implementation. Expected consultant inputs are indicated in the table below.

Consultant	Person-month	Field	Home	2016	2017	2018	2019	2020	2021
1. Project management specialist/team leader	9.0	8.0	0.0	2.0	1.5	1.5	1.5	1.5	1.0
2. Environmental safeguard specialist	7.0	6.0	1.0	1.5	1.5	1.0	1.0	1.0	1.0
3. Social development and safeguard specialist	7.0	6.0	1.0	1.5	1.5	1.0	1.0	1.0	1.0
4. Financial management specialist	7.0	6.0	1.0	1.5	1.5	1.0	1.0	1.0	1.0
5. Food safety management system/HACCP specialist	6.0	5.0	1.0	1.5	2.0	1.0	0.5	0.5	0.5
6. Biogas specialist	6.0	5.0	1.0	1.5	2.0	1.0	0.5	0.5	0.5
7. Wastewater management specialist	4.0	4.0	0.0	0.5	1.0	1.0	0.5	0.5	0.5
8. Eco-livestock production specialist	8.0	7.0	1.0	1.0	2.0	1.5	1.5	1.0	1.0
9. Organic fertilizer production specialist	2.0	2.0	0.0	0.0	0.5	1.0	0.5	0.0	0.0

2. All consultants will have (i) ability to communicate and work effectively with local communities, contractors, and government agencies; (ii) ability to analyze data and prepare technical reports; (iii) proficiency in spoken and written English; and (iv) willingness and health to regularly visit the rural subproject sites.

3. **Project management specialist/team leader** (national, 9 pm). The specialist should preferably have (i) a master's degree of social science or a similar discipline; and (ii) at least 10 years of professional experience with similar projects and assignments in the People's Republic of China (PRC), preferably with international development banks such as ADB. As a team leader,

the specialist shall take overall leadership to and responsibility for the PIC team to ensure the successful delivery and satisfactory performance of the consulting services. The specialist will particularly

- (i) provide guidance to each consulting team member to fulfill his/her duties satisfactorily;
- (ii) establish a good working relationship and procedure and coordination among ADB, the executing and implementing agencies, and other project entities (e.g., external monitors);
- (iii) report and coordinate regularly with ADB, the executing and implementing agencies, and other stakeholders;
- (iv) set up institutional framework, operational procedure, document filling system and work plan to guide and facilitate the project implementation, especially on project performance management system (PPMS) through information technology (IT) tools;
- (v) assist on quality of technical review, technical inputs, procurement documents review, and due diligence report; and review documents of the contractor's claims and other project management support provided by the consulting team;
- (vi) monitor overall project progress, safeguards related issues and plans, and the project's development impacts through the PPMS IT information system;
- (vii) based on the training program and the additional capacity development needs analysis, finalize training plan in consultation with the executing and implementing agencies and PICs;
- (viii) provide capacity development training, policy assessments and recommendations, study tour coordination, and management support to the capacity development activities;
- (ix) assist the executing agency to engage qualified external monitors timely and manage them under the project;
- (x) assist the executing agency to submit the required reports on-time with the quality acceptable for ADB;
- (xi) assist the executing agency to conduct public education campaigns of road safety, environmental awareness for urban transport safety; and
- (xii) prepare all necessary information and conduct required analysis and assessment for ADB's loan administration missions (e.g., loan reviews, loan midterm review, and loan completion).

4. **Environmental safeguard specialist** (national, 7 pm, intermittent). The specialist will be responsible for supporting the project management office (PMO) and the project participating enterprises (PPEs) to implement the project environmental management plan (EMP), including capacity development, monitoring, and reporting. The specialist will have (i) at least a master's degree in environmental management or related field; (ii) at least 5 years applied professional experience in environmental management, monitoring, and/or impact assessment; and (iii)

familiarity with ADB's project management requirements and national environmental management procedures. The specialist will particularly

(Before project implementation)

- (i) ensure that relevant sections of the project EMP, including mitigation and management measures, are incorporated in the construction contract documents and arrangements;
- (ii) assist the PMO to establish and publicize the grievance redress mechanism (GRM);
- (iii) develop procedures to (a) monitor and report on the EMP implementation progress, and (b) record and collate complaints and resolution under the GRM;
- (iv) provide support and training to the PMO, the PPEs, and contractors on the specific requirements of the EMP, as required;
- (v) establish a standard template for the semiannual environmental reporting from the PMO to ADB;
- (vi) assist the PMO to establish standard reporting procedures for environmental reporting from the PPEs to the PMO; and if necessary, a reporting template;
- (vii) help finalize the specific details of monitoring methodology for output 2 'sustainability monitoring program', including
 - a. for each PPE, clarify the specific water and energy sources and methods (meters, well gauges, etc.) that will be recorded quarterly, for both the existing and new (ADB-funded) facilities, to ensure that monitoring will be consistent;
 - b. if necessary, tailor the quarterly data form to the individual PPEs, e.g., if more columns need to be inserted for extra meters or wells;
 - c. for each PPE, clearly describe the specific methods used for measurements at the existing and new (ADB-funded) facilities; and
 - d. prepare simple and brief reporting templates for (i) the PPE to report annual monitoring results to the PMO; (ii) the PMO to report on annual monitoring results of all PPEs, for inclusion in the semiannual progress reports to ADB; and
- (viii) review and ensure the project components' environmental readiness prior to implementation.

(During project implementation)

- (i) conduct regular EMP compliance assessments and external assessment as required in the EMP, including site visits and identification of any environment-related implementation issues, and propose necessary responses in corrective action plans;
- (ii) assist the PMO to prepare semiannual environmental monitoring progress reports for submission to ADB; and
- (iii) for output 2 'sustainability monitoring program': (a) ensure that by the end of the

first year of the PPE operations, data collection is operational and any issues have been resolved; (b) in the first 3 years of operation, closely support the PPEs and the PMO environment officer in the collection, analysis, and reporting of data. Ensure that by the second year, the PPEs and the PMO are fully capable of independently conducting all data collection, storage, analysis, and reporting; and (c) as part of the specialist's independent reporting, include a review of the status of the monitoring program. This should include (a) progress by the PPEs and the PMO; (b) progress and lessons learned from data collection, storage, analysis, and reporting; and (c) comparison of the baseline and performance indicators for the PPEs.

5. **Social development and safeguard specialist** (national, 7 pm, intermittent). The specialist will assist the PMO to monitor and report the implementation of (i) resettlement plan, leasing agreements between farmers' collectivities and the PPEs, and (iii) gender action plan. The specialist will have (i) a graduate degree in the social sciences or a related field such as rural development, development studies; (ii) at least 10 years professional experience in social safeguards, particularly involuntary resettlement, and social and gender development for international development banks such as ADB; and (iii) working knowledge of negotiated agricultural land acquisition processes in the PRC and practical experience with ADB's Safeguard Policy Statement (2009). The specialist will particularly.

(On social safeguards)

- (i) ensure that agreements reached between farmers' collectivities leasing land and the PPEs are implemented according to the agreements that were negotiated at the time of the negotiated land acquisition and that any grievances that might arise are resolved quickly and effectively;
- (ii) ensure that all parties to each leasing agreement understands fully the consequences of the leasing agreements that were signed and reaffirm they are willing to abide by the specific terms of the lease;
- (iii) where leases during project preparatory technical assistance investigations were proved to be only partially compliant (e.g., adult women from households who are a party to the lease not effectively consulted or thumbprints and signatures absent from leasing documents) ensure the leases are rectified before approval from the project;
- (iv) if required, provide on-the-job training to implementing agencies in facilitation of socially inclusive consultations for all parties to the leasing agreement and documentation of the consultations including the gender disaggregation of issues raised during the consultation processes;
- (v) ensure that when annual payments in cash or in-kind are made by the PPEs that all framing households that are parties to the lease are either paid their proportionate share in cash or in-kind;
- (vi) provide training to the implementing agency and project management units (PMUs) to ensure that they have the capacity to monitor and evaluate whether

farmers' collectivities leasing land to the PPEs can retain and preferably improve upon their pre-leasing income as measured by the cash paid or in-kind payments;

- (vii) provide training on GRM to stakeholders (implementing agency, PMO staff, farmers, if required), ensure implementation of the GRM, prepare a reporting and monitoring form on the GRM for the reporting by the PMO to ADB, and ensure this reporting is provided semiannually; and
- (viii) in the event that leasing agreements are breached by either party to the lease, assist the project to develop alternative arrangements, including if necessary, a resettlement plan in accordance with the relevant policies of the Government of the PRC and ADB's Safeguards Policy Statement (2009) as it applies to involuntary resettlement;

(On social dimensions)

- (i) ensure that villagers affected directly and indirectly by the project have been actively consulted during all times of project implementation and that 50% of those consulted are women and that all consultation processes are adequately documented;
- (ii) provide training where necessary to the executing and implementing agencies and village and township authorities in the gender disaggregation of all project-related activities and ensure that adequate records in accordance with good implementation practice are established and maintained;
- (iii) use the gender action plan (GAP) to ensure poorer and vulnerable households are included wherever possible in the project including in value chains of each PPE and are offered some opportunities to participate in waged employment resultant from the expansion of the PPE activities;
- (iv) ensure that women employed by the PPEs are offered effective on-the-job training in safe food production and facilities provided for women (e.g., overnight accommodation, toilets, and bathrooms) are considered adequate by women and conform to occupational health and safety requirements;
- (v) work closely with and provide training to the staff of the County Offices of Poverty Alleviation and Development (PADO) and the All China Women's Federation (ACWF) for PADO and ACWF to reach out and monitor poverty and gender impacts of the project;
- (vi) provide gender awareness programs to the executing and implementing agencies, and the PMUs in coordination with the Henan Provincial Department of Agriculture and Rural Affairs (HDARA) and municipal and county agriculture and rural affairs bureaus (ARABs) on issues relating to outreach to village women to support capacity development in (a) livestock waste management; (b) energy-conserving livestock production; (c) animal disease prevention; (d) safe use of medicines and chemicals; (e) use of organic fertilizers in feed crop

- production; (f) livestock production; and (g) human treatment and culling of livestock;
- (vii) assess the reduction in longer-term migrant labor and whether its cessation has led to a range of social and economic benefits on both an intra-household and inter-household basis in project impacted villages and townships;
- (viii) ensure that female staff members of government agencies and the PPEs are included in training for the establishment of an integrated quality monitoring and testing system for livestock production and that female staff of the executing and implementing agencies have their capacity strengthened for more effective project management and monitoring;
- (ix) prepare reporting and monitoring forms for the PPEs and the PMO regarding GAP targets and indicators, and ensure monitoring by enterprises to the PMO, and by the PMO to ADB;
- (x) assist the implementing agency to prepare regular reports on the progress of GAP activities to be provided to the Henan Provincial Government (HPG) and ADB; and
- (xi) any other tasks deemed necessary by the project that are relevant to social safeguard issues and social dimension as they apply to a project of this nature.

6. **Financial management specialist** (national, 7 pm). The specialist will have (i) a relevant master degree; and (ii) at least 10 years of professional experience with similar projects and assignments in the PRC, preferably with international development banks such as ADB. The specialist will be responsible for assisting the executing and implementing agencies in meeting the financial reporting and financial management requirements of ADB. The specialist will particularly

- (i) assist the executing and implementing agencies to develop or introduce financial management information system and asset transaction and management system for this project;
- (ii) assist the executing agency to set up the project accounts through IT electric accounting system;
- (iii) compile and prepare project financial statements;
- (iv) review audited entity financial statements of the PPEs and compute financial ratios to be included in the progress reports;
- (v) regularly update the project cost estimate and financing plan, including counterpart funding, ADB funding, and other source of financing;
- (vi) prepare quarterly contract awards and disbursement targets and monitor closely with the progress to ensure timely contract awards and disbursement;
- (vii) financially manage the disbursement/withdrawal application on each contract package (e.g., contract variations);
- (viii) collect necessary information for ADB loan administration missions;
- (ix) assist to conduct economic and financial analyses during the loan midterm review and after the project completion;

- (x) assist the executing agency in preparing financial parts of the progress reports; and
- (xi) organize and provide training on effective project financial management.

7. **Food safety management system/HACCP specialist** (national, 6 pm, intermittent). The specialist will have (i) a master degree in food safety, or a relevant discipline; (ii) a hazard analysis and critical control point (HACCP) specialist certification; (iii) at least 3-year experience with HACCP training; and (iv) ability to work and communicate with food processing companies. The specialist will be responsible for the training of staff and management of abattoirs and food processing plants on the establishment, implementation, and operation of individualized HACCP systems. The specialist will particularly

- (i) advise HDARA, MARABs and CARABs and the PPEs on the design and introduction of appropriate technologies and practices (e.g., good management practices [GMPs]) for all aspects of livestock processing, including (a) humane slaughter, (b) meat processing, (c) meat storage, distribution and marketing, (d) meat quality, safety and traceability, (e) staff health and safety, and (f) integration of the practices into the PPE business;
- (ii) ensure the proper training required by industry to establish, implement, and operate a HACCP food safety system;
- (iii) undertake site visits to train and direct staff and management on the development of HACCP systems in each PPE;
- (iv) conduct compliance assessments on the HACCP systems in operation;
- (v) assist the PPEs in the completion of performance indicators from the initial operation phase of the HACCP system; and
- (vi) prepare a report covering each PPE and company baseline sustainability indicators with operational performance indicators.

8. **Biogas specialist** (national, 6 pm, intermittent). The specialist will have (i) a master degree in engineering, clean energy technology, or a relevant discipline, (ii) at least 7 years of working experience in the PRC on biogas digester projects for intensive livestock production systems. The specialist will provide overall guidance to HDARA, MARABs and CARABs and the PPEs regarding technical issues and capacity building to ensure effective and safe operation of the new biogas facilities. The specialist will particularly

- (i) review of conceptual designs for biogas digester technology options posed by the PPEs to provide a technical feasibility assessment;
- (ii) advise the PPEs on the optimal use of their biogas facilities for energy efficiency within their livestock production systems;
- (iii) assist the PPEs to operationalize the investments, including developing and/or updating and documenting tailored standard operating procedures (SOPs) for each biogas digester facility investment;
- (iv) design and provide training in (a) facility maintenance, management, and safety;
- (v) SOPs for system management of the system including staff roles and

responsibilities, record keeping etc.; and (c) utilization of biogas and biogas residues including quality standards for discharge; and provide advice to the PPEs about options to access carbon credits from accrued greenhouse gas (GHG) emission reductions, such as from the clean development mechanism (CDM) and other suitable fund source options;

9. **Wastewater management specialist** (national, 4 pm, intermittent). The specialist will have (i) a master degree in engineering, or a relevant discipline; (ii) at least 7 years of working experience in the PRC on wastewater treatment technologies and facilities, especially for livestock production systems. The specialist will provide overall guidance to HDARA, MARABs and CARABs and the PPEs about suitable technologies, system installation and commissioning as well as training for the PPE operators. The specialist will particularly

- (i) review of conceptual designs for wastewater treatment technology options posed by the PPEs to provide a technical feasibility assessment;
- (ii) advise HDARA, MARABs and CARABs and the PPEs on the (a) design and introduction of appropriate environmentally sustainable wastewater treatment technologies and practices for livestock production and processing waste handling, (b) quality and discharge standards of treated water, and (c) monitoring and recording of water quality and discharge standards;
- (iii) assist the PPEs to operationalize the investments, including developing/updating and documenting tailored SOPs for each new treatment facility consistent with adopted GAPs and GMPs; and
- (iv) design program and materials for training to the PPEs on the management (including integrating new SOPs in the PPE daily operations) and maintenance of their wastewater treatment facilities.

10. **Eco-livestock production specialist** (national, 8 pm, intermittent). The specialist will have (i) a master degree in animal husbandry, animal science, or a relevant discipline; and (ii) at least 10 years of working experience in the PRC on environmentally sustainable livestock and intensive livestock systems. The specialist will provide guidance and training to the PPEs and HDARA, MARABs and CARABs on eco-livestock production for intensive livestock production. The specialist will particularly

- (i) review current and planned PPE livestock production systems and practices for their options and suitability eco-livestock production models;
- (ii) for each PPE investment, develop an eco-livestock farming (production and/or processing) plan with capacity development requirements that clearly provides the business proposition for sustainable livestock farming;
- (iii) advise HDARA, MARABs and CARABs and the PPEs on the design and introduction of appropriate technologies and practices (SOPs and GAPs) for all aspects of livestock production, including (a) breeding and fattening, (b) balanced feeding for improved productivity, (c) GHG emission reduction strategies, (d) animal health and biosecurity, (e) human and animal welfare, (f)

- beneficiary farmer and/or farming household and gender participation, (g) integration of the eco-livestock practices into the PPE business; and
- (iv) in consultation with HDARA, MARABs and CARABs and the PPEs, prioritize the above listed issues for importance and those for which training will be developed and delivered. Training will enhance existing capacity building initiatives already undertaken by the PPEs. Thereafter, design the training program, materials and deliver training on the prioritized selected issues to HDARA, MARABs and CARABs and the PPEs.

10. **Organic fertilizer production specialist** (national, 2 pm, intermittent). The specialist will have (i) a master degree in agriculture, agriculture engineering, bioengineering, or a relevant discipline; and (ii) at least 7 years of working experience in the PRC on organic fertilizer production. The specialist will provide guidance about and oversight for the design and installation of organic fertilizer facilities and production of organic fertilizer that meets product quality and safety specifications. The specialist will particularly

- (i) advise the HDARA, MARABs and CARABs and the PPEs on the design and introduction of appropriate environmentally sustainable nutrient recycling technologies and practices (GAPs/GMPs) for livestock manure and waste handling, including (a) organic fertilizer production and use, (b) design and introduction of a performance monitoring program for quality and product standards, and (c) integration of the practices into the PPE's daily operations and business;
- (ii) review of conceptual designs for organic fertilizer technology options posed by the PPEs and provide a technical feasibility assessment of the proposed facilities;
- (iii) support installation and commissioning of the PPE investments, to safeguard expected economic, social and environmental benefits and sustainability;
- (iv) design and deliver training to the PPEs on organic fertilizer product specifications, safety, management, quality and standards that the PPEs will be required to meet; and
- (v) design and deliver "on-the-job" training for the PPEs in manufacturing processes (including GMPs), management of the facility and maintenance of technical equipment to ensure production of organic fertilizer that meets quality and safety standards.

ANNEX 3: ENVIRONMENTAL SUSTAINABILITY MONITORING PROGRAM FOR OUTPUT 2

1. **Overview.** Project output 2 is “environmentally sustainable livestock production facilities established.” Under this output the project is assisting the project participating enterprises (PPEs) to finance civil works and equipment for production units, processing facilities, feed processing facilities, and in-house process facilities for animal waste and waste treatment. Environmental sustainability is a key aspect of the output. The collection and analysis of sustainability indicators is an activity which is separate from the environmental management plan (EMP) environmental monitoring. It is intended to measure progress in achieving environmentally sustainable livestock production for each PPE. For this project, environmental sustainability is defined as “Livestock production and processing which is sited, designed and operated to minimize the use of external resources (especially water, energy, chemicals) and to maximize recycling and reuse of its waste products.”

2. **Baseline and performance indicators.** The assessment of environmental sustainability for each PPE will be achieved by quantitative comparison between two sets of indicators: baseline and performance indicators. Up to 15 indicators will be monitored, covering water and energy resources, waste treatment, and expenditure on veterinary drugs (Table A3.1); the exact number will depend on the extent of water and/or energy resources used by each PPE. Indicators were selected on the basis of: (i) they reflect important issues concerning natural resource use in the livestock industry in the PRC and globally; and (ii) replicability and ease of collection, low cost, and limited training needs. Baseline indicators are collected from the PPE’s existing (non-ADB-funded) operations which are similar to the planned ADB-funded facilities, specifically: (i) support the same livestock type; (ii) similar size and operations; and (iii) in the same county. Performance indicators are the same set of parameters as the baseline indicators, to be measured in the new facilities once operational.

3. **Data collection, timing, and duration.** Monitoring data will be collected in a standardized form (Table A3.1). Data sources and collection methods are described in the form and will be refined during project implementation. Data sources include meter readings for water and electricity (meters will be installed in the new facilities as part of the project design), billing statements, and inventory records. Data will be collected in three-month periods (e.g., quarterly) at each PPE. Data collection will continue throughout the life of project operations. To help prepare the form, a trial data collection phase was implemented and baseline indicators for 2013 were collected for seven of the eight PPEs.

4. **Data standardization.** All raw data will be converted to “per head of livestock”, so that valid comparisons can be made between baseline and performance indicators. For example: if the enterprise used 100,000 liters of water over a 3-month period, and HDARA an inventory of 70 cattle, then the water use for that quarter was 1,429 liters/head.

5. **Data storage.** Quarterly monitoring data will be entered into an excel sheet in the same format as Table A3.1. Completion of the form requires the conversion of raw data to “per head of livestock”. These adjusted values will then be entered into a database which stores all adjusted data for baseline and performance indicators, for each PPE, per quarter and per year (Table A3.2). The monitoring form (Table A3.1) and database (Table A3.2) have been provided to the PMO as an excel file. The database contains individual spreadsheets for each PPE.

6. Reporting. The PPEs will (i) provide the quarterly data to the PMO; (ii) provide a brief annual report to the PMO summarizing the annual monitoring results, any issues encountered, how these were resolved, and lessons learned. This can be included within the overall PPE annual report to the PMO. The PMO will summarize the annual results from all PPEs and include this in the semiannual progress reports to ADB.

A. Roles and Responsibilities

7. Project participating enterprises. (i) Collect all quarterly raw data; (ii) at end of each quarter, enter raw data into excel sheet and submit to the PMO; (iii) ensure raw data forms (hard copies) and excel files are stored in a safe, clean and dry place, and can be easily retrieved (e.g., if requested by the PMO and/or ADB); and (iv) submit brief annual report to the PMO (see above) by the following January.

8. PMO environment officer. (i) Review the quarterly data and discuss with the PPEs to check for any missing data or obvious errors or concerns; (ii) enter the PPE quarterly data into the livestock product quality and monitoring inspection system (output 1 of the project); (iii) include the results in the semiannual environment reports to ADB; and (iv) ensure that the PMO includes the results in the progress reports to ADB for outputs 1 and 2 of the project.

9. Loan implementation environment consultant. (i) For each PPE, clarify the specific water and energy sources and methods (meters, well gauges, etc.) that will be recorded quarterly, for both the existing and new (ADB-funded) facilities, to ensure that monitoring will be consistent. If necessary, tailor the quarterly data form to the individual PPEs, e.g., if more columns need to be inserted for extra meters or wells. For each PPE, clearly describe the specific methods used for measurements at the existing and new (ADB-funded) facilities; (ii) prepare simple and brief reporting templates for (a) the PPE annual report to the PMO; (b) the PMO reports to ADB, for inclusion in the semiannual progress reports to ADB; (iii) ensure that by the end of the first year of PPE operations, data collection is operational and any issues have been resolved; (iv) in the first 3 years of operation, closely support the PPEs and the PMO environment officer in the collection, analysis, and reporting of data. Ensure that by the second year, the PPEs and the PMO are fully capable of independently conducting all data collection, storage, analysis, and reporting; (v) prepare independent progress reports which review the status of the monitoring program, including progress by the PPEs and the PMO, issues and lessons learned, and comparison between baseline and performance indicators.

Table A3.1: Field Data Sheet for Quarterly Collection of Environmental Sustainability Indicators

COLLECTION OF ENVIRONMENTAL SUSTAINABILITY INDICATORS									
Company name:									
Company type (please circle): Cattle Pigs Chickens Ducks									
Location of facility:									
Is this an ADB-funded		YES / NO							
What facility is paired with this one for comparison?									
Quarter covered by		1st Q (Jan-Mar) / 2nd Q (Apr-Jun) / 3rd Q (Jul-Sep) / 4th Q (Oct-Dec)							
Date of monitoring: Day		Month		Year					
Name of person who completed this									
Number of animals in this facility in									

WATER	Unit	Meter	Meter	Meter	Meter	Meter	Meter	Total	Total per head
Surface water									
Town pipeline supply	m ³								
Company reservoir	m ³								
Rainwater	m ³								
Other	m ³								
Groundwater well		Well	Well	Well	Well 4	Well	Well	Total	Total per head
Total storage capacity	m ³								
Water level (depth)	m								
Recharge rate	m ³								
ENERGY CONSUMPTION		Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Total	Total per head livestock*
Electricity	kWh								
Coal	tons								
LPG	m ³								
Biogas	m ³								
WASTE TREATMENT		Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Total	Total per head livestock*
Treated wastewater	m ³								
Biogas production	m ³								
		Company production records						Total	Total per head
Organic fertilizer	tons								
LIVESTOCK HEALTH		Company account records						Total	Total per head
Purchases of veterinary	CNY								
NOTES									

*Divide the total value (all raw data summed) by the number of animals in the facility in this quarter.

Table A3.2: Database for Storing Total Quarterly and Annual Values for Environmental Sustainability Indicators, Adjusted to Per Unit Livestock (Project Output 2)^a

Company name:																																					
Company type (please circle): Cattle Pigs Chickens Ducks																																					
Name of person entering data:																																					
INDICATOR		2013										2014										2015															
		Existing (non ADB-funded) facility					Annual	ADB-funded facility					Annual	Existing (non ADB-funded) facility					Annual	ADB-funded facility					Annual	Existing (non ADB-funded) facility					Annual	ADB-funded facility					Annual
	Unit	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	
WATER CONSUMPTION																																					
Surface water																																					
Town pipeline supply	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Company reservoir	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Rainwater	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Other																																					
Groundwater well							n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Total storage capacity	m						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Water level (depth)	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Recharge rate	kWh/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
ENERGY CONSUMPTION							n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Electricity	tons/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Coal	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
LPG																																					
Biogas	m ³ /Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
WASTE TREATMENT							n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
Treated wastewater	tons/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																
discharged																																					
Biogas production	CNY/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a																

^a Years 2013–2015 shown for illustration. Columns to be added to database for each new year throughout life of operations.

ANNEX 4: SUBPROJECT SELECTION CRITERIA AND PROCESS

1. The process used for the subproject selection involved representatives from the Henan Provincial Development and Reform Commission (HDRC), the Henan Provincial Finance Department (HFD), and the Henan Provincial Agriculture Department (HDARA). The selection criteria were drawn up and agreed by those provincial government agencies and were then sent to all municipalities and counties in the province asking them to recommend one or two enterprises in their respective areas that were likely to meet the criteria and might be interested to participate in the project. A total of more than 20 enterprises were proposed as potential candidates for the project. A joint delegation from the provincial government agencies then visited each of the candidate enterprises to collect data and discuss possible participation in the project with each company's senior management. A selection was then made of those enterprises that best met the criteria for participating in the project. This original list included 17 enterprises. For various reasons, nine of them have dropped out, and one was added later leaving a total of nine enterprises currently included in the proposed project.

2. The subproject selection criteria, translated from the original document, are given in para. 3 below.

3. Enterprises to join the project must be those recognized as leading agro-processing enterprises by either provincial level or national level. Specific criteria are

- i) **Enterprise scale.** For processing enterprises, total assets shall exceed CNY50 million, fixed assets shall exceed CNY20 million, and annual sales revenue shall be more than CNY70 million; for service enterprises, total assets shall exceed CNY30 million, fixed assets shall exceed CNY10 million, and sales revenue shall be more than CNY50 million; for special wholesale marketing enterprises, the annual volume of trade shall exceed CNY200 million.
- ii) **Economic benefits.** Rate of return on total assets of the enterprise shall be higher than bank lending rate in the corresponding period; the enterprise shall not have outstanding taxes, salaries or social security payments, nor shall it have deficits.
- iii) **Corporate reputation.** The debt equity ratio of the enterprise is generally below 60% and the corporate credit rating shall be Grade A and above.⁴⁶
- iv) **Employment impact.** Generally, the number of rural families supported by the enterprise (except special production and state-owned land reclamation enterprises) through a contract or other stable and binding mechanism shall exceed 2,000. During the production and processing of agricultural products, raw materials or goods purchased through contracts, share buying and cooperation shall make up more than 70% of raw materials needed or goods purchased.

Competitiveness. The enterprise shall be leading in product quality, scientific and technological contents, and ability to develop new products among enterprises in the same industry within the province. Its main products shall accord with industrial and environmental policies and quality management standard system of Henan Province and the capacity utilization shall exceed 90%. The enterprise shall have a good financial situation with relatively strong economic strength and loan repayment ability.

- v) **Enterprise standing.** The enterprise shall have good social credibility, have a great

⁴⁶ This refers to corporate credit ratings given by domestic banks

influence on local economic development, and enjoy a high capacity of local government support. There shall be no bad records of business operation.

- vi) **Local government's fiscal condition.** Municipalities or counties in which the projects are located shall fully consider other factors like local GDP, fiscal revenue and debts, and conduct risk assessment to find out whether local indicators including growth rate of debts and financial ability, debt ratio, debt-to-GDP ratio, debt repayment ratio and loan repayment reserve ratio are in the green (safe) areas according to computing methods and evaluation criteria specified in Notification from Ministry of Finance on issuing "Interim Procedures For Inspection on Foreign Debts Index of Local Governments" (CAI JIN [2008] No.175). Meanwhile, the local government should undertake a financial assessment of the enterprises with regard to financial status and loan repayment capacity and report to HFD whether they agree to the selection of the enterprise.
- vii) **Production scale.** Inventory of pigs shall exceed 10,000; inventory of chicken or duck shall exceed 100,000; cattle inventory shall exceed 2,000. Product quality shall be stable with broad market prospects and good economic benefits, and environment protection requirements shall be met.
- viii) **Project design.** Project design needs to take into full account recycling of resources, sustainable development, value chain linkages and additional value improvement; innovation in developing pattern and management philosophy shall be emphasized.
- ix) **Demonstration and local economic impact.** Project selection shall have the potential for a relatively strong demonstration effect in its area and neighboring areas, for the economic development of its area and for increasing the income of farmers.

4. As noted above, the subproject selection process was undertaken by representatives of HDRC, HFD, and HDARA. The selection criteria were partly quantitative and partly qualitative and among the quantitative criteria not all involved data that would be readily available and easily obtainable. For example, most of the criteria included in para. 3 above involve readily available quantitative data or other evidence (e.g., leading enterprises [para. 3(v)] are formally recognized by various government agencies and certification to this effect may often be produced). However, the criterion that more than 70% of raw materials should be purchased "through share contracts, share buying, and cooperation" appears to have been difficult for the selection delegation to assess and no data about this has been available either from the selection process or from the selected enterprises.

The production scale criteria in para. 3(viii) are also quantitative and straightforward. However, the criteria outlined in paras. 3(vi)–(x) above are qualitative or require judgments based on the evaluation of quantitative data by the selection delegation from the three provincial agencies (such as whether enterprises meet local government financial and fiscal criteria).

ANEEX 5: ENVIRONMENTAL MANAGEMENT PLAN

**HENAN SUSTAINABLE LIVESTOCK FARMING AND
PRODUCT SAFETY DEMONSTRATION PROJECT**

People's Republic of China

**Prepared by the Henan Provincial Government with the assistance of the Asian
Development Bank**

Revised in August 2019

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This environmental management plan is an attachment to the initial environmental examination report, which is an official document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff and may be preliminary in nature. Your attention is directed to the "Terms of Use" section of the ADB website (www.adb.org).

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A. Introduction

1. This environmental management plan (EMP) is developed for the Henan Sustainable Livestock Farming and Product Safety Demonstration Project (the project). It summarizes the potential project environmental impacts and defines mitigation measures and monitoring requirements for the design, construction, and operational stages of the project. It also defines the institutional arrangements and mechanisms, roles and responsibilities of different institutions, and costs for EMP implementation. The EMP seeks to ensure continuously improving environmental protection activities during preconstruction, construction, and operation to avoid, reduce, and/or mitigate adverse impacts and risks. The EMP is based on the findings of the initial environmental examination (IEE) and domestic environmental assessment reports.

2. This EMP will be disclosed on the Asian Development Bank's (ADB) public website (www.adb.org) and included in the project administration manual (PAM). It will also be included as a separate annex in all bidding and contract documents. The contractors will be informed of their obligations to implement the EMP, and to provide for EMP implementation costs in their bids for project works.

3. The EMP includes a monitoring program. Monitoring results will be used to evaluate: (i) the extent and severity of actual environmental impacts against the predicted impacts; (ii) the performance of the environmental protection measures and compliance with relevant laws and regulations; (iii) trends of impacts; and (iv) overall effectiveness of the EMP.

B. Institutional Arrangements and Responsibilities for EMP Implementation

4. The Henan provincial government is the executing agency (EA) for the project. The EA has set up a project coordinating group (PRG) to facilitate liaison with project agencies and to assist in complaints resolution in the GRM. The PRG comprises representatives from the Henan Provincial Development and Reform Commission (HDRC), the Henan Provincial Finance Department (HFD), the Henan Animal Husbandry Bureau (HAHB), the Henan Provincial Environmental Protection Department (HEPD), the Henan Poverty Alleviation Bureau, and the Women's Federation of the People's Republic of China (PRC).

5. The EA has established a project management office (PMO), who will be responsible, on behalf of the EA, for the day-to-day management of the project and the implementation of the EMP. The PMO has nominated and established the position of a PMO environment officer (Table A1.1) who will coordinate the activities of the EMP. The terms of reference for this officer are in Annex A.

6. The PMO, through the PMO environment officer and in coordination with the loan implementation environment consultant (LIEC), will do the following.

- (i) Prepare and provide the following specification clauses for incorporation in the bidding procedures: (a) environmental management requirements to be budgeted by the project participating enterprises (PPEs) and their construction contractors; (b) environmental clauses for contractual terms and conditions; and (c) the EMP;
- (ii) Translate the EMP into Chinese language, and ensure that it remains consistent with this original version in English language;
- (iii) Ensure the EMP is implemented by the contractors, and that all contractors and the PPEs comply with the EMP;
- (iv) Implement the grievance redress mechanism (GRM, Section G); and
- (v) Prepare and submit semiannual environmental monitoring reports to ADB.

7. **Environmental monitoring station.** In each project county, the environmental monitoring station (EMS) of the environmental protection bureau (EPB) will be contracted by the PPE to

implement the external environmental monitoring program described in this EMP. The PMO will supervise this monitoring. Each EMS will report to the local EPBs and PMO. Each EMS will be identified in the project procurement plan.

8. The LIEC will be hired under the loan implementation consultancy services. The terms of reference for this position are in Annex B. The LIEC is essential to completion of environmental pre-construction activities and should be recruited as soon as possible after loan effectiveness. The LIEC will assist the PMO environment officer with the following:

1. Before Construction

- (i) Assist the PMO and the PPEs to integrate the EMP mitigation and management measures into construction contracts and arrangements;
- (ii) Ensure that relevant sections of the project EMP are incorporated in the construction contract documents;
- (iii) Assist the PMO to establish and publicize the GRM;
- (iv) Facilitate and engage the implementation of the Environmental Sustainability Monitoring Plan;
- (v) Develop procedures to (a) monitor and report on the EMP implementation progress, and (b) record and collate complaints and resolution under the GRM;
- (vi) Provide support and training to the PMO, the PPEs, and contractors on the specific requirements of the EMP, as required; and
- (vii) Assess the project components' environmental readiness prior to implementation.

2. During Project Implementation

- (i) Conduct regular EMP compliance assessments; undertake site visits, as required; identify any environment-related implementation issues; and propose necessary responses in corrective action plans;
- (ii) Assist the PMO to prepare semiannual environmental monitoring progress reports for submission to ADB;
- (iii) Assist the PPEs in the completion of performance indicators from the initial operation phase for the sustainability demonstration form (Annex C); and
- (iv) Prepare a sustainability demonstration report for each PPE comparing baseline sustainability indicators with operational performance indicators.

9. The PPEs will implement the project components and EMP mitigation measures, administer and monitor contractors and suppliers, and be responsible for construction supervision and quality control at each subproject site. Each PPE has assigned an environment and social officer (Table A5.1).

10. The contractors will need to understand their requirements under the EMP. Each contractor will be required to assign a specific member of their work team who will be responsible for the team's environmental, health, and safety management. The contractors will work with the PPE environment and social officers, the PMO environmental and social safeguard officer, and the LIEC to ensure that prior to any works, the EMP is jointly reviewed and any site-specific measures are identified and agreed.

Table A5.1: Environment and Social Officers for the Project

	Project contact person	Environment Officer	Social Officer
PMO	Mr. Wang Jinzhong (Director of FECC, Henan Agricultural Department).	Ms. Li Xiaoyun 0371-65918852	Ms. Li Xiaoyun 0371-65918852 Lxyun96@163.com
HDARA	Mr. Liu Hongwei 13937160010 lhw0371@163.com	Mr. Song Shandao 15890636525 lhw0371@163.com	Mr. Liu Hongwei 13937160010 lhw0371@163.com
Dadi	Ma Xiaozhen (Project Manager) 13303719936 DDmy2008@163.com	Mr. Xin Bin 13939816371 17142362@qq.com	Hu Min (Enterprise Legal Officer). 15838160271 DDmy2008@163.com
Fenghua	Zhang Zhigang (Manager) 15890818199/0396-2880939 zhangzhigangemail@163.com 763133128@qq.com	Li Guocheng 18695809901 zhangzhigangemail@163.com 631726753@qq.com	Li Guocheng 18695809901 zhangzhigangemail@163.com 631726753@qq.com
Hengtianran	Zhang Guoyan (General Manager). htrnm@163.com 13903748818	Li Siqiang htrnm@163.com 13253746367	Zhang Qi (Project Manager) 6830501@qq.com 18903741567
Muyuan	Shao Shiyang (Project Manager) 13937731481 Nxssy1129@163.com	Xie Xingshuang 17839538170 myspxxs@163.com	Xie Xingshuang 17839538170 myspxxs@163.com
MYM	Shao Shiyang (Project Manager) 13937731481 Nxssy1129@163.com	Xie Xingshuang 17839538170 myspxxs@163.com	Xie Xingshuang 17839538170 myspxxs@163.com
Sangao	Yi Xiuyun (Project Manager) 13569757198 hngssg@163.com	Zhao Chuanfa (General Manager's Secretary) 13839713589	Yang Xutian (Engineering Manager). 13603973153 hngssg@163.com
Sheqi Muyuan	Shao Shiyang (Project Manager) 13937731481 Nxssy1129@163.com	Xie Xingshuang 17839538170 myspxxs@163.com	Xie Xingshuang 17839538170 myspxxs@163.com
Yongxin	Zhou Lei (Project Manager) 13592207789	Zhang Yabin 18037659511 460230467@qq.com	Zhang Yabin 18037659511 460230467@qq.com

C. Summary of Potential Impacts and Mitigation Measures

11. Potential environmental issues and impacts during the pre-construction, construction and operation phases, and corresponding mitigation measures, are summarized in Table A5.2.

Table A5.2: Summary of Potential Impacts and Mitigation Measures^a

Item	Issue	Mitigation / Safeguard Measure	Agency	Check
Pre-construction				
1.1 Detail design stage	Sustainability program	Begin sustainability monitoring program (Section E)	PPEs	PMO, LIEC, ADB
	Sustainable development	Enhance water use efficiency, incorporate health and safety control measures and strengthen greening.	PPEs	PMO, LIEC, ADB
	Assess remaining environmental issues	Dadi PPE and EIA institute to update domestic EIA, taking account of cumulative impact for new site location (near existing pig facility)	PPE via EIA Institute	PMO, LIEC

Item	Issue	Mitigation / Safeguard Measure	Agency	Check
	Wastewater treatment design and disposal	Prepare and submit to PMO details of the management and monitoring of biogas slurry to ensure compliance with standards for discharge and use as liquid fertilizer (GB7959-87). Sangao PPE to provide details of land application of biogas slurry as set out in IEE Table VI.61	PPEs and Dis Sangao PPE and EIA Institute	PMO, LIEC
	Solid waste treatment arrangements	Where solid waste generated in animal production to be handled by arrangements off-site (veterinary waste, desulfurizer residue, incinerator ash), the capacity and willingness of off-site waste handlers to accept waste will be documented.	PPEs	PMO
	Water extraction permission	PPEs will obtain a water use permit for their water inputs from the local Water Resources Bureaus – providing all details required for that application to the WRB Muyuan, Dadi, Hengtianran, Sangao, Fenghua, Muyuan Meat Food, Sheqi Muyuan and Yongxin PPEs to provide details of water use permit.	PPEs	Local WRBs, PMO, LIEC
1.2 Project environmental support	Establish and implement environmental support positions	Contract a loan implementation environmental consultant (LIEC)	PMO	ADB
		Contract environmental monitoring stations in each county (under the Henan Environmental Protection Division)	PPE	PMO, LIEC
		Appoint of the PMO environment and social officers	PMO	PMO, LIEC
		Assign environment and social officers at each PPE	PPE	PMO, LIEC
1.3 Construction preparation stage	Update EMP	Update mitigation measures defined in this EMP based on the detailed design, including disclosure of IEE on the ADB website	Dis, PPEs	PMO, LIEC, ADB
	Construction plans and documents	i. Prepare environment section in the terms of reference for construction bidders; ii. Prepare environmental contract clauses for construction, using reference to EMP and monitoring table.	PPEs (using Dis)	PMO, LIEC
	Establish and publicize grievance redress mechanism	i. Implement GRM; ii. Identify GRM entry points and brief them on their role; iii. Publicize GRM entry points, people and contacts at each PPE construction site, in local newspapers, websites and village committee and community premises before construction commences	PMO	PCG, LIEC, ADB
	Construction site planning	i. Prepare construction plans including appropriate parts for each PPE from the project EMP, ii. Nominate an environmental, health, and safety officer (EHSO) in contractors' team iii. Develop site environmental health and safety plan for approval by the PPE.	Head contractor for each PPE	PPEs, PMO, LIEC
	Construction water use arrangements	If contractor will use tankers to supply construction water on site: appropriate approvals for filling tankers at water source will be obtained and submitted to the PMO. If water from on-site well(s) is to be used: extraction permits and/or approvals will be obtained and submitted to the PMO.	PPE, contractor	PMO, LIEC
	Environmental Training	LIEC to provide training on implementation and supervision of environmental mitigation measures to contractors (see table AI.8)	LIEC	PMO
Construction				

Item	Issue	Mitigation / Safeguard Measure	Agency	Check
2.1 Air quality	Local air pollution from construction activities	<ul style="list-style-type: none"> i. Material stockpiles and concrete mixing equipment will be equipped with dust shrouds. Earthworks to prepare site should be undertaken just before commencement of construction to avoid long term stockpiling. The height of stockpiles should be less than 0.7m; ii. Vehicles transporting potentially dust-producing materials will have proper fitting sides and tail boards and covered with protective canvasses; iii. On-site movement of cement bags should not overload people or vehicles to minimize bag rupture and spillage; iv. Unauthorized burning of construction waste material shall be subject to penalties for the contractor, and withholding of payment. 	Contractors	PPEs
2.2 Water resources	Source of construction water	Contractors will be responsible for sourcing water for general construction camp use. No groundwater shall be extracted without extraction permits and/or approvals (see Item 1.3)	Contractors	PPEs
2.3 Water quality	Pollution of surface water and groundwater	<p>Contractors shall ensure that:</p> <ul style="list-style-type: none"> i. Sedimentation tanks are built, and after settling out of solids the upper clear liquid is recycled for spraying the construction site (dust control), and the waste residue in the tank is cleared and transported to designated landfills; ii. Oil traps are provided for service areas and parking areas, and oil-water separators are installed before the sedimentation tank for oil-containing wastewater; iii. All construction machinery is repaired and washed at special repairing shops. No on-site machine repair and washing shall be allowed; iv. Storage facilities for fuels, oil, and other hazardous materials are within secured areas on impermeable surfaces, and provided with bunds and cleanup kits; v. The contractors' fuel suppliers are properly licensed, follow proper protocol for transferring fuel, and are in compliance with Transportation, Loading, and Unloading of Dangerous or Harmful Goods (JT 3145-88) 	Contractors	PPEs
2.4 Revegetation	Impact on flora and fauna	<p>Minimize construction area by site planning and construction management.</p> <p>Ensure that during backfill, the original order of soil layers is followed.</p> <p>The principle of "recover the amount of damaged" will be employed, to recover any lost landscape and vegetation after construction.</p>	Contractors	PPEs
		Revegetation and landscape planting (including trees for sheds) should be native species indigenous to the region.		
2.5 Physical cultural resources	Protection of chance finds	Chance find procedures in line with the PRC government procedures will be established for undiscovered underground cultural or historic sites that might be identified during project implementation.	Contractors and PPEs	PMO, County Administration of Cultural Heritage

Item	Issue	Mitigation / Safeguard Measure	Agency	Check
2.6 Health and safety	Construction safety	<p>Construction contractor shall ensure that</p> <ul style="list-style-type: none"> i. all reasonable steps are taken to protect any person on the site from health and safety risks; ii. the construction site is a safe and healthy workplace; iii. machineries and equipment are safe; iv. adequate training or instruction for occupational health and safety is provided; v. all workers are provided with personal protection equipment; vi. adequate supervision of safe work systems is implemented; and vii. means of access to and egress from the site are without risk to health and safety. <p>The contractors' performance and activities for occupational health and safety shall be incorporated in their monthly progress reports.</p>	Contractors	PPEs, PMO
Operation				
3.1 Water	Impact on water resources	Install water meters to measure all water entering the livestock production process from all sources (pipelines (township supply), wells and local reservoirs and report water consumption quarterly.	PPEs	PMO, ADB
	Impact on surface water quality from wastewater	Ensure biogas slurry meets the standards of Sanitary Standard for the Non-Hazardous Treatment of Manure and Night Soil (GB7959-87) before releasing to farmland and used as liquid fertilizer.	PPEs	PMO, ADB
	Impact on groundwater quality	<p>Implement provisions of Technical Standard of Preventing Pollution for Livestock and Poultry Breeding (HJ/T81-2001).</p> <ul style="list-style-type: none"> i. separation of stormwater drainage system and sewerage collection system (stormwater to be stored separately for site use); ii. built sewage collection and distribution system in the project site; iii. no open trenches; iv. drainage vessels with anti-seepage measures or cement pipes to convey wastewater and prevent overflow and infiltration; v. all storage facilities, pre-treatment tanks, digesters, settling tanks, drainage pipes, digestate storage tanks, and rain water collection tanks should be designed with high quality materials and monitored for leaks. 	PPEs	PMO, ADB
3.2 Air quality	Odor and safety (NH ₃ and H ₂ S)	In local planning, maintain a 500m distance around site in compliance with Technical Standard of Preventing Pollution for Livestock and Poultry Breeding (HJ/T81-2001) to prevent residential development.	Local and county government	PMO, HPG
	Noise impacts	In local planning, maintain a 500m buffer around site in compliance with the Technical Standard of Preventing Pollution for Livestock and Poultry Breeding (HJ/T81-2001) to prevent residential development.	Local and county government	PMO, HPG
3.3 Solid waste	Unplanned or unsound disposal of solid wastes	All solid waste generated in animal production to be handled and disposed of by arrangements on-site or off-site. Off-site arrangements must have the capacity and willingness to accept waste in the long term.	PPEs	PMO, LIEC
3.4 Major hazards	Biogas storage hazard	Management of level 2 hazard under HJ/T169-2004 to be implemented:	PPEs	PMO, Henan Safety and security Office

Item	Issue	Mitigation / Safeguard Measure	Agency	Check
3.5 Health and safety	Health and safety of operating staff	Operating staff to be protected from workplace hazards by; i. safe storage and handling of chemicals for disinfection of facilities and livestock, ii. safe handling of chemicals, serums, and veterinary pharmaceuticals in laboratories; iii. personal protection gear for work hazards; iv. staff protection from exposure to animal diseases.	PPEs	PMO, Henan Safety and security Office

ADB = Asian Development Bank, DI = design institute, EIA = environmental impact assessment, EPB = environmental protection bureau, PPE = participating project enterprise, O&M = operation and maintenance, PMO = project management office, WRB = water resources bureau.

Sources: Project preparatory technical assistance team; and subproject EIAs.

^a See Tables A5.6, 8–9 for costs. Note: Items 1.1 and 1.3 = costs are part of the project design costs; item 1.2 = items funded under the project loan (loan consultants) or the PMO costs.

D. Monitoring and Reporting

12. Three types of project monitoring will be conducted under the EMP.

- (i) **Compliance monitoring.** To be conducted by the LIEC;
- (ii) **Internal monitoring.** To be conducted by the PPE. This will include monitoring of air quality and noise during construction, and wastewater quality (including inlet and outlet of sewage treatment station, and pay attention to the periodic change of water quality and quantity) and groundwater during operation; and
- (iii) **External monitoring.** To be conducted by a qualified environmental monitoring unit. This will include air, noise and water during construction and air (odor), noise, wastewater quality and groundwater during operation.

13. ADB will oversee project compliance on the basis of the semiannual environmental monitoring reports provided by the PMO and site visits as required. Monitoring and reporting arrangements defined for this project are described below.

14. **Project readiness inspection.** Before construction, the LIEC will assess each PPE's readiness in terms of environmental management based on a set of indicators (Table A5.3) and report it to ADB and the PMO. This assessment will demonstrate that environmental commitments are being carried out and environmental management systems are in place before construction starts, or suggest corrective actions to ensure that all requirements are met. Some of these commitments are particularly important because information relating to them was either not submitted in the PPTA phase or submitted too late in the PPTA phase for proper resolution. These include compliance with loan covenants and assurances relating to (i) the management of treated wastewater as liquid fertilizer and (ii) the sustainability of groundwater extraction, as well as confirming environmental compliance of facilities providing store chickens associated with the Sangao subprojects.

Table A5.3: Project Readiness Assessment Indicators

Indicator	Criteria	Assessment
Environmental Supervision	• LIEC is in place	Yes / No
	• Qualified environmental monitoring stations contracted by PMO	Yes / No
Compliance with loan covenants and assurances	• The borrower complies with loan covenants related to project design and environmental management planning	Yes / No
	• Assurances on (i) the management of treated wastewater as liquid fertilizer (see Section VI.I of IEE) and (ii) the sustainability of groundwater extraction (see Section VI.I of IEE)	Yes / No

Indicator	Criteria	Assessment
Domestic EIA	• Dadi PPE and EIA Institute have updated domestic EIA, accounting for cumulative impacts of new site location (near existing pig facility)	Yes / No
Public involvement	• Meaningful consultation completed	Yes / No
	• GRM established with entry points	Yes / No
Contracts include environmental safeguards	• Bidding documents and contracts incorporating the environmental activities and safeguards listed as loan assurances	Yes / No
Construction plans	• Site construction plan prepared for each PPE	Yes / No
Water extraction permits/approvals	• For construction water	Yes / No
	• For PPE facility operation	Yes / No
Solid waste arrangements	• Documentation showing capacity and willingness of agencies to accept waste from each PPE (includes veterinary waste, household waste, desulfurizer residue and incinerator ash)	Yes / No
EMP financial support	• The required funds have been set aside for EMP implementation by each PPE	Yes / No
Sustainability Demonstration	• The baseline data for the Sustainability Environmental Demonstration Format has been filled in for each PPE	Yes / No

15. **Project monitoring.** Table A5.4 shows the environmental monitoring program designed for this project, defining the scope, location, parameter, duration and frequency, and responsible agencies, for monitoring during the construction and operational stages. Monitoring parameters were identified in the environmental assessment for each PPE (Chapter VI.B of the IEE) and also reflect the requirements of national regulatory standards. Internal environmental monitoring will include monitoring of air quality and noise in the construction stage and wastewater quality and groundwater in the operations stage. External monitoring will include air, noise and water during construction and air (odor from biogas plant and organic fertilizer plant), noise, wastewater quality and groundwater during operations.

16. The environmental monitoring results will be compared with relevant PRC performance standards (Table A5.5). Noncompliance with these standards will be highlighted in the monitoring reports. Monitoring results will be submitted to the PMO and then reported by the PMO to ADB in semiannual environmental monitoring reports (prepared with the support of the LIEC – Table A5.6).

Table A5.4: Environmental Monitoring Program

Item	Parameter	Monitoring Location	Monitoring Frequency and Duration	Implementing Agency	Supervising Agency	Cost (per PPE/year) CNY10 ³
CONSTRUCTION STAGE						
Internal monitoring						
Dust & noise	TSP, L _{Aeq}	At PPE boundaries	2 times/week during construction activity	PPE and contractor	PMO	In construction costs
External monitoring						
Dust and noise	TSP, L _{Aeq}	At nearest village to each PPE	1 day (24-hr continuous) per month during construction	EMS	PMO	18
Surface water quality	SS	Nearest waterbody or drainage ditch downstream of PPE	1 day per month during construction	EMS	PMO	12
OPERATIONAL STAGE						

Item	Parameter	Monitoring Location	Monitoring Frequency and Duration	Implementing Agency	Supervising Agency	Cost (per PPE/year) CNY10 ³
Internal monitoring						
Waste water quality	pH, COD, BOD, NH ₃ -N, TN, TP, Number of fecal coliforms, <i>Schistosoma</i> & hookworm eggs, fly and mosquito larvae	At inlet and outlet of biogas plant	Continuous monitoring for 3 years, once a month	EMS	PMO, Local EPB	Included in O&M budget 8 (except MYM and Fenghua PPEs) ^a
Ground water	Oxygen consumption, hardness, nitrate, nitrite, fluoride, total coliform	Two observation wells. (500m underground in the northwest and southeast of the plant site boundary)	quarter	EMS	PMO, Local EPB	Included in O&M budget
External monitoring						
Air quality/odor	NH ₃ , H ₂ S	At two nearest villages downwind of PPE (in direction of prevailing winds)	1 time per day for 2 days per month for 12 consecutive months. Monitoring can cease when 100% compliance achieved 3 consecutive times at the same site	EMS	PMO, Local EPB	180
Noise	L _{Aeq}	At all PPE boundaries facing settlements	The monitoring can be stopped after the completion of construction; each monitoring point needs to be monitored three times continuously	EMS	PMO, Local EPB	45
Ground water	Consumed oxygen, hardness (CaCO ₃), nitrate, TP, Total coliform group	At monitoring wells constructed in the agricultural fields receiving land application of biogas slurry	Monthly during crop growing season	EMS	PMO, Local EPB	45 (except MYM and Fenghua PPEs) ^a
Total estimated cost (per PPE/year):						308
^a Total estimated cost for MYM and Fenghua PPEs (per PPE/year):						255

BOD = biological oxygen demand, COD = chemical oxygen demand, CaCO₃ = calcium carbonate, EMS = environmental monitoring station; EPB = environmental protection bureau; NH₃-N = ammonium nitrate. O&M = operation and maintenance; PMO = project management office; PPE = project participating enterprise, TN = total nitrogen, TP = total phosphorous.

Notes: (i) The PPEs do not need to monitor biogas slurry quality or groundwater quality; and (ii) all costs, including training were estimated by the PPTA team based on experience in similar projects.

Table A5.5: Monitoring Indicators and Applicable PRC Standards

Phase	Indicator	Standard
Construction	Dust at the PPE boundary	Air Pollutant Comprehensive Emission Standard (GB16297-1996)
	Dust at nearby village(s)	Class II Ambient Air Quality Standard (GB 3095-2012)
	Noise limits at boundary of PPE	Emission Standard of Environmental Noise for Boundary of Construction Site (GB 12523-2011)

	Surface water quality	Surface Water Ambient Quality (GB3838-2002). The target standard for each monitoring site is the existing (pre-construction) class at that site.
Operation	Odor (NH ₃ , H ₂ S)	Emission Standards for Odor Pollutants (GB 14554-93) and Hygiene Standards for the Design of Industrial Enterprises (TJ36-79)
	Noise	Emission Standard for Industrial Enterprises Noise at Boundary (GB 12348-2008)
	Wastewater	Standards for Irrigation Water Quality (GB5084-2005) and Sanitary Standard for the Non-Hazardous Treatment of Manure and Night Soil (GB7959-87)
	Groundwater	Quality Standards for Groundwater (GB/T14848-2017). The target standard for each monitoring site is the existing (pre-construction) class at that site.

17. **Compliance evaluation.** Independent evaluation of the compliance with EMP measures will be undertaken by the LIEC. The PMO will report the LIEC's independent evaluation to ADB on the project's adherence to the EMP, information on project implementation, environmental performance of the contractors, and environmental compliance through quarterly project progress reports and semiannual environmental monitoring reports (Table A5.6). The LIEC will support the PMO in developing the semiannual environmental monitoring reports. The reports should confirm the project's compliance with the EMP and local legislation (including the PRC's EIA requirements), the results of independent evaluation (both the PPE and/or contractor compliance with the EMP and the results of environmental monitoring by the qualified environmental monitoring stations), identify any environment related implementation issues and necessary corrective actions, and reflect these in a corrective action plan. Operation and performance of the project GRM, environmental institutional strengthening and training, and compliance with all covenants under the project will be included in the report.

18. **Environmental acceptance reporting.** Following the PRC Regulation on Project Completion Environmental Audit (MEP, 2001), within 3 months after the completion of each subproject, an environmental acceptance report for each subproject shall be prepared by a licensed environmental monitoring institute. The report will be reviewed and approved by the HEPD and reported to ADB (Table A5.6). The environmental acceptance reports of the component completions will indicate the timing, extent, effectiveness of completed mitigation and of maintenance, and the needs for additional mitigation measures and monitoring during operations.

Table A5.6: Reporting Plan

Reports		From	To	Frequency
Pre-construction Phase				
Project readiness	Project Readiness report	LIEC	ADB	Once before construction
Construction Phase				
Internal monitoring	Environmental monitoring report	PPE	PMO, LIEC	Monthly
External environmental monitoring	Environmental monitoring report	Qualified environmental monitoring stations	Local EPBs, PMO	Monthly
Compliance monitoring	Environment progress and monitoring reports	PMO, LIEC	ADB	Semi-annual
Acceptance report	Environmental acceptance report	Licensed acceptance institute	Local EPB, EPD	Once; within 3 months of completion of physical works
Operational Phase				
Internal monitoring	Environmental monitoring report (first three years of operation)*	PPE	PMO, LIEC	Quarterly
Compliance monitoring	Compliance with EMP measures report (first year of operation)	LIEC	ADB	Quarterly

External environmental monitoring	Environmental monitoring report (first three years of operation) ^a	Qualified environmental monitoring stations	Local EPBs, PMO	Quarterly
Progress report	Environmental progress report	PMO	ADB	Semi-annual

ADB = Asian Development Bank, EPB = environmental protection bureau, HEPD = Henan Environmental Protection Department, LIEC = loan implementation environment consultant, PMO = project management office.

^a 3 years of monitoring from the date of the acceptance report.

E. Environmental Sustainability Indicators for Output 2

19. **Overview.** Project Output 2 is “environmentally sustainable livestock production and processing implemented”. Under this Output the project is assisting the PPEs to finance civil works and equipment for production units, processing facilities, feed processing facilities, and in-house process facilities for animal waste and waste treatment. “Environmental sustainability” is a key aspect of the Output. The collection and analysis of sustainability indicators is an activity which is separate from the environmental monitoring plan of this EMP. It is intended to measure progress in achieving environmentally sustainable livestock production for each PPE. For this project, environmental sustainability is defined as:

Livestock production and processing which is sited, designed, and operated to minimize the use of external resources (especially water, energy, chemicals) and to maximize recycling and reuse of its waste products.

20. **Baseline and performance indicators.** The assessment of environmental sustainability for each PPE will be achieved by quantitative comparison between two sets of indicators: baseline and performance indicators. Up to 15 indicators will be monitored, covering water and energy resources, waste treatment, and expenditure on veterinary drugs (Annex C); the exact number will depend on the extent of water and/or energy resources used by each PPE. Indicators were selected on the basis of: (i) they reflect important issues concerning natural resource use in the livestock industry in the PRC and globally; (ii) replicability and ease of collection, low cost, and limited training needs. **Baseline indicators** are collected from the PPE’s existing (non ADB-funded) operations which are similar to the planned ADB-funded facilities, specifically: (i) support the same livestock type; (ii) similar size and operations; (iii) in the same county. **Performance indicators** are the same set of parameters as the baseline indicators, to be measured in the new facilities once operational.

21. **Data collection, timing, and duration.** Monitoring data will be collected in a standardized form (Annex C). Data sources and collection methods are described in the form and will be refined during project implementation. Data sources include meter readings for water and electricity (meters will be installed in the new facilities as part of the project design), billing statements, and inventory records. Data will be collected in three-month periods (i.e., quarterly) at each PPE. Data collection will continue throughout the life of project operations. To help prepare the form, a trial data collection phase was implemented and baseline indicators for 2013 were collected from the eight PPEs.

22. **Data standardization.** All raw data will be converted to “per head of livestock”, so that valid comparisons can be made between baseline and performance indicators. For example: if the enterprise used 100,000 liters of water over a 3-month period, and HDARA an inventory of 70 cattle, then the water use for that quarter was 1,429 liters/head.

23. **Data storage.** Quarterly monitoring data will be entered into an excel sheet in the same format as Annex C. Completion of the form requires the conversion of raw data to “per head of livestock”. These adjusted values will then be entered into a database which stores all adjusted data for baseline and performance indicators, for each PPE, per quarter and per year (Annex D). The monitoring form (Annex C) and database (Annex D) have been provided to the PMO as an

excel file. The database contains individual spreadsheets for each PPE.

24. **Reporting.** The PPEs will (i) provide the quarterly data to the PMO; (ii) provide a brief annual report to the PMO summarizing the annual monitoring results, any issues encountered, how these were resolved, and lessons learned. This can be included within the overall PPE annual report to the PMO. The PMO will summarize the annual results from all PPEs and include this in the semiannual progress reports to ADB.

25. Roles and Responsibilities

- (i) **Project participating enterprises.** (a) Collect all quarterly raw data; (b) at end of each quarter, enter raw data into excel sheet and submit to PMO; (c) ensure raw data forms (hard copies) and excel files are stored in a safe, clean and dry place, and can be easily retrieved (e.g., if requested by PMO and/or ADB); and (d) submit brief annual report to the PMO (see above) by the following January.
- (ii) **Project management office environment officer.** (a) Review the quarterly data and discuss with the PPEs to check for any missing data or obvious errors or concerns; (b) enter the PPE quarterly data into the livestock product quality and monitoring inspection system (Output 1 of the project); (c) include the results in the semiannual environment reports to ADB; and (d) ensure that the PMO includes the results in the progress reports to ADB for Outputs 1 and 2 of the project.
- (iii) **Loan implementation environment consultant (LIEC).** (a) Review and if necessary, refine the quarterly data collection form (Annex C) and database (Annex D). Prior to making any revisions, seek review and approval from the PMO and ADB; (b) prepare simple and brief reporting templates for (i) PPE annual report to PMO; (ii) PMO reports to ADB, for inclusion in the semiannual progress reports to ADB; (c) ensure that by the end of the first year of PPE operations, data collection is operational and any issues have been resolved; (d) in the first 3 years of operation, closely support the PPEs and the PMO environment officer in the collection, analysis, and reporting of data. Ensure that by the second year, the PPEs and the PMO are fully capable of independently conducting all data collection, storage, analysis, and reporting; and (e) prepare independent progress reports which review the status of the monitoring program, including progress by the PPEs and the PMO, issues and lessons learned, and comparison between baseline and performance indicators.

F. Training

26. The capacity of the PMO and the PPEs and their environment and social officers responsible for EMP implementation and supervision will be strengthened through training. This will impart an understanding of the goals, methods, and practices of project environmental management. Initially, the training will be in formal workshops but will extend to on the job training by the LIEC as he/she visits construction sites.

27. The formal training will cover EMP implementation, supervision, and reporting, and on the Grievance Redress Mechanism (GRM, Table A5.7). Training will be facilitated by the LIEC with support of other experts under the loan implementation consultant services. Attendees from the PPEs will be the environmental and social officers and supervising engineers.

Table A5.7: Training Program

Training	Attendee	Content	Time	Day	Person	Cost (CNY/ person/ day)	Total CNY
EMP implementation	PMO and PPEs	EMP roles and responsibilities, monitoring, supervision, reporting procedures, review of experience (after 12 months)	Once prior to, and once after the first year of project implementation	2	35	600	42,000
Grievance redress mechanism	All "project agencies"	Roles and responsibilities, Procedures	Once prior to, and once after, the first year of project implementation	1	40	600	36,000
Environmental protection and monitoring	PMO and PPEs	Pollution control on construction sites (air, noise, waste water, solid waste)	Once (during project implementation)	2	35	600	42,000
Sustainability demonstration monitoring	PMO, PPEs	Measurement and reporting of performance indicators	Once (during project implementation)	1	35	600	21,000
Total estimated cost:							141,000

EMP = environmental management plan, PMO = project management office, PPE = project participating enterprise, PPTA = project preparatory technical assistance.

Note: All costs, including training, were estimated by the PPTA team based on experience in similar projects.

G. Grievance Redress Mechanism

28. A GRM has been established as part of the project EMP to receive and manage any public environmental and/or social issues which may arise due to the project. The project agencies will ensure that potentially affected communities are informed on GRM at an early stage of the project. The PPEs, the PMO, and the HEPD personnel have received training from the PPTA team on the GRM.

29. Project agencies (i.e., those directly involved in the project) comprise the PMO, the PPEs, contractors, village committees, and local EPBs. The PMO is the lead agency responsible for overall management, implementation, and reporting of the GRM. The PMO environment and social officers coordinate the GRM and will (i) instruct the concerned PPEs, local EPBs, and contractors on their responsibilities in the GRM; (ii) establish a simple registry system to document and track grievances received (including forms to record complaints and how they have been resolved); and (iii) report on progress of the GRM in the semi-annual environmental monitoring and progress reports to ADB.

30. The full list of GRM officers and their contact points is in Table A5.1. Each PPE has assigned an environmental and/or social contact person within their staff, who are responsible for implementation of the GRM and other relevant aspects of the EMP. Tasks include keeping a record of complaints. At least 2 months before construction commences, these contacts will be publicized at each PPE construction site and forwarded to local village committees to ensure that entry points to the GRM are well known.

31. **GRM readiness procedures prior to start of construction.** To be successful and reduce the likelihood of public concerns, the following measures will be implemented before any construction:

- (i) **Land acquisition.** As per the project covenants, leasing agreements for land and buildings or other facilities to be leased have been accepted by the affected peoples (women and men) that are leasing all or portions of their land or other physical assets to the project.
- (ii) **On-site procedures.** (a) All contractors and work staff will be briefed by the PMO on the GRM. Contractors and workers will be instructed to be courteous to local residents and, in the event they are approached by the general public with an issue, to immediately halt their work and report the issue to the foreman; and (b) at least one sign will be erected at each construction site providing the public with updated project information, the GRM process, and contact names and details for the GRM entry points (Table A5.1).
- (iii) **Non-project agencies.** Prior to project construction, the PMO will notify all relevant agencies about the project and GRM, so that if these agencies receive complaints, they know to contact the PMO and follow up, as necessary. This will include, but not be limited to, local EPBs, the local courts, and police.

32. The procedure and timeframe for the GRM is shown in Figure A5.1 and is as follows.

- (i) **Stage 1 (maximum 15 working days).** Affected persons or groups can submit a written or oral complaint to the project agencies (i.e., village committee, contractor, PPE, local EPB, PMO) as well as any other relevant institutions they wish to (e.g. the local courts, police, etc). Project agencies take the following steps in Stage 1 if they receive a complaint.

- (a) **Step 1.** Project agency receives complaint. Within 2 working days, notifies the PMO.
 - (b) **Step 2.** The PMO assesses if the complaint is eligible. Within 1 working day (i.e., maximum of 3 working days from first receipt of the complaint) informs the project agency handling the complaint of its eligibility. Eligible complaints include those where (i) the complaint pertains to the project; and (ii) the issues fall within the scope of environmental and social issues that the GRM is authorized to address.
 - (c) **Step 3a—Eligible complaints.** The agency attempts to resolve the issue directly with the affected person. Within 5 working days of receiving the complaint, the agency will provide clear advice to the affected person on the proposed corrective action and by when it will be taken. In general, the corrective action(s) will be implemented not later than 10 working days from this point. If quick corrective action is not possible, or the agency receiving the complaint is unsure how to proceed, or the complainant is not satisfied by the initial corrective action, then the complaint will be referred to the PMO and Stage 2 actions.
 - (d) **Step 3b—Ineligible complaints.** If a complaint is assessed to be ineligible, the PMO and the project agency meet with the affected person and inform them. The PMO will ask the affected person if they would like to be referred to relevant agencies.
 - (e) **Step 4.** The project agency submits all documentation on the case to PMO. The PMO will enter the complaint and resolution in the complaints register. This will include making a written record of any oral complaints.
 - (f) **Non-project agencies.** In the event that non-project agencies receive complaints and refer these to the PMO, the PMO will follow the steps above.
- (ii) **Stage 2 (maximum 10 working days).** For complaints not resolved by other project agencies in Stage 1, Stage 2 is initiated. The PMO environment and/or social officers will meet with the affected person and together discuss the issue and identify possible solutions. Prior to the meeting, the PMO will ask the affected person if the subject agency (e.g., contractor, the PPE) and village committee can attend the meeting. At the meeting, a possible solution will be agreed upon. The subject agency (e.g., contractor, the PPE, village committee) will implement the agreed solution and report the outcome to the PMO within 5 working days of receipt of this advice. The PMO will also inform ADB and include all relevant documents in its progress reports to ADB.
 - (iii) **Stage 3 (maximum 6 weeks).** If Stage 2 is unsuccessful (i.e., no solution can be identified or the affected person is not satisfied with the proposed solution), the PMO will refer the complaint to the PCG. The PCG will work with all stakeholders to identify a solution acceptable to all. The agreed solution will be implemented and a report on the outcome provided to the PMO within 4 weeks.

33. Time limits for these steps are listed in Table A5.8.

Table A5.8: Time Limits for GRM Stages

Stage	Time Limits	Steps	Internal Time Limits	
Stage 1	15 working days	1 and 2	Complaint resolved directly with the affected person	5 working days from receipt of complaint
		3 and 4	Complaint referred to the project management office (PMO) for resolution	10 working days from receipt of complaint
Stage 2	10 working days		PMO identifies solution, and replies to affected person and the appropriate agency for action	5 working days from the PMO's receipt of complaint
			Contractor, project participating enterprise (PPE), or village committee implements agreed solution	5 working days from receipt of the PMO's advice
Stage 3	4 weeks		Solution agreed with the project coordinating group (PCG), resolved, and reported	4 weeks from referral of complaint from the PMO to the PCG
			Implementation of action plan	2 weeks after finalization of action plan by PCG

34. Any costs incurred to receive, document, and address grievances will be paid by the PMO. The grievance procedures will remain valid throughout the duration of project construction and the first 2 years of project operation.

35. The tracking and documenting of grievance resolutions by the PMO will include the following elements: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) regular updating of the GRM database by the PMO environment and social officers; (iii) processes for informing stakeholders about the status of a case; and (iv) a simple but effective filing system, so that data can be retrieved for reporting purposes, including reports to ADB.

36. No part of the project GRM affects the existing rights of affected persons to take their complaints to the courts. At any time in this process, an affected person may contact ADB (East Asia Department) directly, including ADB's Resident Mission in the PRC (PRCM).

37. If the above steps are unsuccessful, people adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department (in this case, ADB's East Asia Department). Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.⁵³

⁵³ Available at: www.adb.org/accountability-mechanism

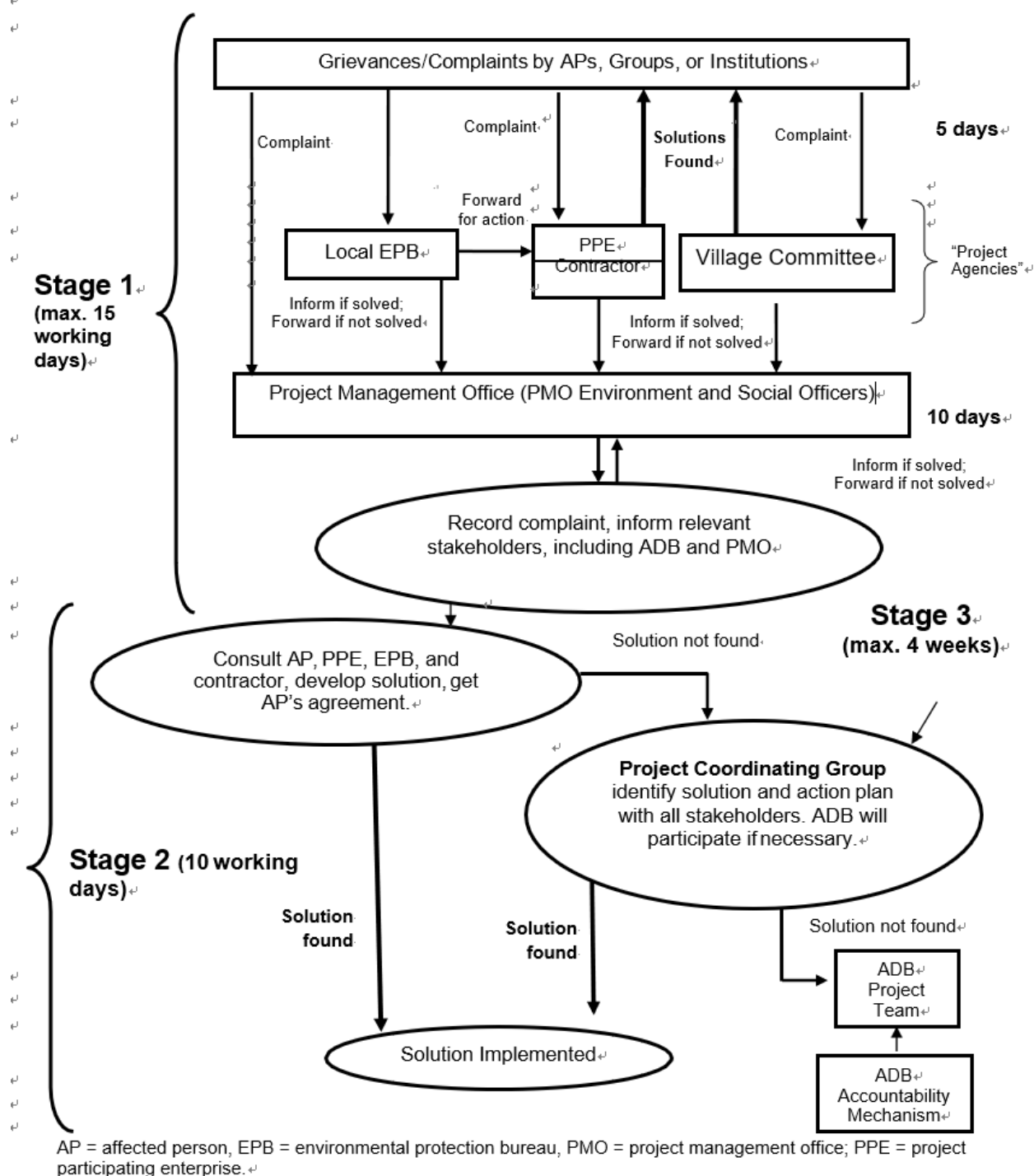


Figure A1.1: The Project Grievance Redress Mechanism

H. Cost Estimates

38. The cost for EMP implementation comprises three items: mitigation measures (Table A5.2), environmental monitoring (Table A5.4), and training (Table A5.6). The costs are summarized in Table A5.10. Excluded from the budget are (i) detailed design revisions and adjustments (ii) infrastructure costs which relate to environment and public health but which are already included in the project direct costs and (iii) remuneration for the PMO environment and social officers and loan implementation consultants. All costs, including training were

estimated by the PPTA team based on experience in similar projects. The need for the EMP and preliminary cost estimates were discussed with the PPEs during the PPTA phase.

39. The PPEs will pay for compliance environmental monitoring costs during construction and initial operating phase. The PPEs and their contractors will pay for all mitigation measures during construction, including those specified in the contract documents and any unforeseen impacts due to construction activities. The PMO and the PPEs will bear the costs related to environmental supervision during construction and operation respectively. The PMO will bear the costs for training, the GRM, and the LIEC (Table A5.9).

Table A5.9. Summary of EMP Budget for 5 Years^a

Agency	Impact Mitigation (Table A2.1)						Monitoring - Internal + External (Table A1.4)	Training (Table A1.5)	Total for 5 years (CNY)	Total per Year (CNY)
	1.3 GRM	2.2 Water Resources	2.3 Water Quality	2.4 Revegetation	3.4 Biogas	3.5 Health and Safety				
PMO	4,000	0	0	0	0	0	0	141,000	145,000	29,000
Dadi	4,000	12,000	14,000	30,000	50,000	15,000	1,540,000	0	1,665,000	333,000
Fenghua	4,000	4,000	5,000	10,000	0	5,000	1,275,000	0	1,303,000	260,600
Hengtianran	4,000	5,000	6,000	10,000	20,000	6,000	1,540,000	0	1,591,000	318,200
Muyuan	4,000	10,000	12,000	25,000	45,000	12,000	1,540,000	0	1,648,000	329,600
MYM	4000	20000	10000	20000	0	20000	1275000	0	1349000	269800
Sangao	4,000	8,000	10,000	20,000	40,000	10,000	1,540,000	0	1,632,000	326,400
Sheqi Muyuan	4000	12000	15000	25000	60000	20000	1540000	0	1676000	335200
Yongxin	4000	12000	12000	25000	50000	15000	1540000	0	1658000	331600
Total (CNY)	36000	83000	84000	165000	265000	103000	11790000	141000		
GRAND TOTAL (CNY):									12,667,000	

Notes: Monitoring (internal+external) costs: CNY308,000/year for all PPEs, except MYM and Fenghua PPEs (CNY255,000/year), which do not need to monitor biogas slurry quality or groundwater quality.

^a See Tables A2.1, A1.4 and A1.5 for breakdown of costs.

ANNEX 5.A: DRAFT TERMS OF REFERENCE

—PROJECT MANAGEMENT OFFICE ENVIRONMENT OFFICER

I. Background

1. Development projects which are assisted by the Asian Development Bank (ADB) routinely require the establishment of a project management office (PMO). The PMO is responsible for project implementation and comprises the provincial and/or municipal agencies involved in the project. Compliance with the loan and project agreements includes implementation of an environmental management plan (EMP), which is prepared as part of the project environmental impact assessment (EIA). The EMP is the critical guiding document to manage, monitor, and report upon potential project environmental impacts. Implementation of the EMP is a full-time task. For this reason, the PMO assigns a full-time officer for this role. These terms of reference describe the requirements for the PMO environment officer.

II. Scope and Duration of Work

2. The PMO environment officer will work on behalf of the PMO to implement the project EMP. The officer will report directly to the PMO. The position is for the entire project duration of generally 5 years.

III. Qualifications

3. The PMO environment officer will have (i) an undergraduate degree or higher in environmental management or related field; (ii) at least 5 years of experience in environmental management, monitoring, and/or impact assessment; (iii) ability to communicate and work effectively with local communities, contractors, and government agencies; (iv) ability to analyze data and prepare technical reports; (v) willingness and of good health to regularly visit the project construction sites and in different seasons; and (vi) ideally, proficiency in spoken and written English.

IV. Detailed Tasks

4. The PMO environment officer will have a detailed understanding of the project EMP and supporting documents, including the domestic environmental reports, the project EIA, and project environmental assurances. The PMO environment officer will be responsible for the following.

- (i) Assess whether the EMP requires updating due to any changes in project design which may have occurred after the EMP was prepared;
- (ii) Distribute the Chinese language version of the EMP to all relevant agencies, including the implementing agencies; provincial and municipal agencies for environmental protection, forestry, water resources, and/or land planning; contractors; and construction supervision companies. This should occur at least 3 months before the construction begins;
- (iii) Conduct meetings with agencies, as necessary, to ensure that they understand their specific responsibilities described in the EMP;
- (iv) Ensure that relevant mitigation, monitoring, and reporting measures in the EMP are included in the bidding documents, contracts, and relevant construction plans;

- (v) Confirm that the project participating enterprises (PPEs) responsible for the internal environmental monitoring described in the EMP understand their tasks and will implement the monitoring in a timely manner;
- (vi) At least 2 months before the construction begins, establish and implement the project grievance redress mechanism (GRM) described in the EMP. This will include (a) preparing a simple table and budget to identify the type, number, and cost of materials needed to inform local communities about the GRM; and the starting date and scope of construction; (b) designing, preparing, and distributing these materials; and planning and conducting the community meetings; (c) preparing a form to record any public complaints; (d) preparing a summary table to record all complaints, including dates, issues, and how they were resolved; and (a) ensuring that all relevant agencies, including contractors, understand their role in the GRM;
- (vii) Prior to construction, ensure that the PPEs and their contractors have informed their personnel, including all construction workers, of the EMP requirements which will include all mitigation measures relating to impacts to air, water, noise, soil, sensitive sites, ecological values, cultural values, worker and community health and safety, respectful behavior when communicating with local communities, and responding to and reporting any complaints;
- (viii) During project construction, make regular site visits with the loan implementation environment consultant (LIEC) to assess the progress, meet with contractors and/or local communities, and assess the compliance with the EMP;
- (ix) Ensure that all relevant agencies will submit the required progress reports and information, including the environmental monitoring and reports of any issues or grievances;
- (x) Compile, review, and store environmental progress reports from the PPEs, records of any grievances, and any other relevant issues; maintain digital copies of all information; when necessary, enter the data into summary tables in digital format (e.g., to transfer records of grievances from hard copy forms); and ensure that all information is stored in the PMO filing system, backed up, and can be easily retrieved;
- (xi) **Environmental sustainability indicators (Output 2).**
 - (a) Review the quarterly monitoring data collected by the PPEs, and discuss with them about any missing data or concerns;
 - (b) Enter the PPE quarterly data into the livestock product quality and monitoring inspection system (Output 1 of the project);
 - (c) Include the results in the semiannual environment reports to ADB; and
 - (d) Ensure that the PMO includes the results in the overall progress reports to ADB for Outputs 1 and 2 of the project;
- (xii) Prepare the semiannual environment progress reports; and

- (xiii) Work closely with the PMO, the PPEs, the loan implementation consultants, and other agencies and personnel, as necessary, to conduct these tasks.

V. Reporting Requirements

- 5. Semiannual environment monitoring reports, using the template provided by ADB or a domestic format, reviewed and approved by ADB.

VI. Logistical Support Provided by the Project Management Office to the Environment Officer

- (i) Provision of hard and soft copies of the project EMP, domestic and project environmental reports, feasibility study reports, loan and project agreements, maps, and other supporting materials, as necessary, to ensure that the PMO environment officer can implement the tasks;
- (ii) Vehicle transport, office materials, and other logistical support, as necessary, for the PMO environment officer to visit the project construction sites and local communities, arrange and conduct meetings, and prepare and distribute consultation materials; and
- (iii) Overall coordination, including review of the draft semiannual monitoring reports; and final responsibility for submission of the monitoring reports to ADB.

ANNEX 5.B: DRAFT TERMS OF REFERENCE —LOAN IMPLEMENTATION ENVIRONMENTAL CONSULTANT

I. Background

1. The Henan Sustainable Livestock Farming and Product Safety Demonstration Project in Henan Province, People's Republic of China (PRC) will be implemented by nine companies specializing in livestock production and/or processing. They are termed 'project participating enterprises' (PPEs). Project implementation will be overseen and coordinated by a project management office (PMO), established within the Henan Provincial Department of Agriculture. The PMO will be assisted by a loan implementation consultant team. The loan implementation environmental consultant (LIEC) will be a part of this team and will assist the PMO in the implementation of the project environmental management plan (EMP).

II. Scope and Duration of Works

2. This position could be a firm or an individual engaged by the PMO. It is an independent position. It is not part of the PMO's in-house environmental team or any PPE. The specialist will report directly to the PMO. The position is for the entire project duration of 5 years. The LIEC should be recruited as soon as possible after loan effectiveness, as their first task is to confirm the project environmental readiness (Table A5.3).

III. Qualifications

3. The specialist will have (i) an undergraduate degree or higher in environmental management or related field; (ii) at least 5 years of experience in environmental management, monitoring and/or impact assessment; (iii) familiarity with the ADB project management requirements and the national environmental management procedures; (iv) ability to communicate and work effectively with local communities, contractors, and government agencies; (v) ability to analyze data and prepare technical reports; (vi) willingness and of good health to regularly visit the subproject sites; and (vii) proficiency in spoken and written English.

IV. Tasks

A. Before Construction

- (i) Ensure the project environmental readiness, including ensuring that (i) the checklist in Table A5.3 of the EMP is achieved; (ii) all contractor contracts include, and will comply with, the EMP; and (iii) relevant sections of the EMP are incorporated in the construction plans and contracts;
- (ii) Assist the PMO in implementing the grievance redress mechanism (GRM), including the following: (a) establish and publicize the GRM; and (b) collate and evaluate the grievances received;
- (iii) Develop the procedures to (i) monitor the EMP implementation progress; (ii) collate and evaluate the data collected in the EMP environmental monitoring program; and (iii) prepare and submit the semiannual environmental monitoring reports to ADB (to continue until submission of the project completion report); and
- (iv) Provide hands-on support and on-the-job training to the PMO, the PPEs, and

contractors on the specific requirements of the EMP, as required.

B. During Project Implementation

- (i) Undertake site visits to all PPEs during subproject construction and operation;
- (ii) Conduct the EMP compliance assessments, identify any environment-related implementation issues, and propose necessary responses in corrective action plans;
- (iii) Assist the PMO in preparing the semiannual environmental monitoring progress reports for submission to ADB; and
- (iv) Perform the following relating to the environmental sustainability indicators (Output 2):
 - a. For each PPE, clarify the specific water and energy sources and methods (meters, well gauges, etc.) that will be recorded quarterly, for both the existing and new (ADB-funded) facilities, to ensure that monitoring will be consistent;
 - b. If necessary, tailor the quarterly data form to the individual PPEs, e.g., if more columns need to be inserted for extra meters or wells;
 - c. For each PPE, clearly describe the specific methods used for measurements at the existing and new (ADB-funded) facilities;
 - d. Prepare simple and brief reporting templates for (a) the PPE to report annual monitoring results to the PMO; (b) the PMO to report on annual monitoring results of all PPEs, for inclusion in the semiannual progress reports to ADB;
 - e. Ensure that by the end of the first year of the PPE operations, data collection is operational; and any issues have been resolved;
 - f. In the first 3 years of operation, closely support the PPEs and the PMO environment officer in the collection, analysis, and reporting of data; And ensure that by the second year, the PPEs and the PMO are fully capable of independently conducting all data collection, storage, analysis, and reporting; and
 - g. As part of the LIEC's independent reporting, include a review of the status of the monitoring program; this should include (i) progress by the PPEs and the PMO; (ii) progress and lessons learned from data collection, storage, analysis, and reporting; and (iii) comparison of the baseline and performance indicators for the PPEs.

ANNEX C: FIELD DATA SHEET FOR QUARTERLY COLLECTION OF ENVIRONMENTAL SUSTAINABILITY INDICATORS (PROJECT OUTPUT 2)

COLLECTION OF ENVIRONMENTAL SUSTAINABILITY INDICATORS										
Company name:										
Company type (please circle): Cattle Pigs Chickens Ducks										
Location of facility:										
Is this an ADB-funded facility? YES / NO										
What facility is paired with this one for comparison?										
Quarter covered by this form: 1st Q (Jan-Mar) / 2nd Q (Apr-Jun) / 3rd Q (Jul-Sep) / 4th Q (Oct-Dec)										
Date of monitoring: Day Month Year										
Name of person who completed this form:										
Number of animals in this facility in this quarter:										

WATER CONSUMPTION	Unit	Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Total	Total per head livestock*	
Surface water										
Town pipeline supply	m ³									
Company reservoir	m ³									
Rainwater	m ³									
Other	m ³									
Groundwater well		Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Total	Total per head livestock*	
Total storage capacity	m ³									
Water level (depth)	m									
Recharge rate	m ³									
ENERGY CONSUMPTION		Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Total	Total per head livestock*	
Electricity	kWh									
Coal	tons									
LPG	m ³									
Biogas	m ³									
WASTE TREATMENT		Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Total	Total per head livestock*	
Treated wastewater discharged	m ³									
Biogas production	m ³									
Company production records								Total	Total per head livestock*	
Organic fertilizer produced	tons									
LIVESTOCK HEALTH		Company account records						Total	Total per head livestock*	
Purchases of veterinary drugs	CNY									
NOTES										

*Divide the total value (all raw data summed) by the number of animals in the facility in this quarter

ANNEX D: DATABASE FOR STORING TOTAL QUARTERLY AND ANNUAL VALUES FOR ENVIRONMENTAL SUSTAINABILITY INDICATORS, ADJUSTED TO PER UNIT LIVESTOCK (PROJECT OUTPUT 2) *

Company name:
Company type (please circle): Cattle Pigs Chickens Ducks
Name of person entering data:

INDICATOR		2013										2014										2015										
	Existing (non ADB-funded) facility					Annual	ADB-funded facility				Annual	Existing (non ADB-funded) facility					Annual	ADB-funded facility				Annual	Existing (non ADB-funded) facility				Annual	ADB-funded facility				Annual
	Unit	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total	
WATER CONSUMPTION																																
Surface water	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Town pipeline supply	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Company reservoir	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Rainwater	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Other	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Groundwater well	m						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Total storage capacity	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Water level (depth)																																
	kWh/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Recharge rate	tons/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
ENERGY CONSUMPTION	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Electricity	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Coal	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
LPG	m³/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Biogas	tons/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
WASTE TREATMENT	CNY/Head						n/a	n/a	n/a	n/a	n/a						n/a	n/a	n/a	n/a	n/a											
Treated wastewater discharged																																

*This table only shows the data record form of 2013-2015, and adds rows and columns to record the monitoring data of the whole project cycle during the project implementation