ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 49322-001
June 2016

Proposed Loan
Inner Mongolia Saikexing Breeding and Biotechnology Group
Sustainable Dairy Farming and Milk Safety Project (People's Republic of China)

This is the abbreviated version of the document that excludes commercially sensitive and confidential business information that is subject to exceptions to disclosure set forth in ADB's Public Communications Policy 2011

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 18 April 2016)

Currency unit	–	yuan (CNY)
CNY1.00	=	$0.1544
$1.00	=	CNY6.4781

ABBREVIATIONS

ADB	–	Asian Development Bank
capex	–	capital expenditure
ESMS	–	environmental and social management system
PRC	–	People's Republic of China
SKX	–	Inner Mongolia Saikexing Breeding and Biotechnology Group

NOTES

(i) The fiscal year (FY) of Inner Mongolia Saikexing Breeding and Biotechnology Group and its subsidiaries ends on 31 December.

(ii) In this report, "$" refers to US dollars.

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CONTENTS

PROJECT AT A GLANCE

1. Basic Data — **Project Number:** 49322-001

Project Name	PRC: Sustainable Dairy Farming and Milk Safety Project
Country	China, People's Republic of
Department /Division	PSOD/OPSD

2. Sector	**Subsector(s)**	**ADB Financing ($ million)**
✓ Agriculture, natural resources and rural development	Livestock	62.50
	Total	**62.50**

3. Strategic Agenda	**Subcomponents**	**Climate Change Information**	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Medium
Environmentally sustainable growth (ESG)	Eco-efficiency		

4. Drivers of Change	**Components**	**Gender Equity and Mainstreaming**	
Partnerships (PAR)	Commercial cofinancing Private Sector	Some gender elements (SGE)	✓
Private sector development (PSD)	Promotion of private sector investment		

5. Poverty Targeting		**Location Impact**	
Project directly targets poverty	No	Rural	High

6. Safeguard Categorization **Environment:** B **Involuntary Resettlement:** C **Indigenous Peoples:** C

7. Financing

Modality and Sources	Amount ($ million)
ADB	**62.50**
Nonsovereign Local Currency Loan: Ordinary capital resources	62.50
B-Loans	**62.50**
Commercial Banks	62.50
Official Cofinancing [a]	**0.00**
None	0.00
Others [b]	**35.00**
Total	**160.00**

[a] Concessional financing from external sources.
[b] Derived by deducting ADB financing, B Loans and Official Cofinancing from Project Total Cost.

Source: Asian Development Bank

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan of up to $125 million equivalent in US dollars and yuan—comprising (i) an A-loan of up to $62.5 million and (ii) a complementary loan of up to $62.5 million—to Inner Mongolia Saikexing Breeding and Biotechnology Group (SKX) for the Sustainable Dairy Farming and Milk Safety Project in the People's Republic of China (PRC).

II. THE PROJECT

A. Project Identification and Description

1. Project Identification

2. **Unfinished agriculture modernization**. Agriculture has developed rapidly and has made substantial contributions to the overall economic development of the PRC. However, the transition to modern agriculture has not kept pace with urbanization and industrialization. The per capita income of urban households was 2.75 times that of rural households in 2014. Given its fundamental contribution to food security and the improvement of rural livelihood, agricultural modernization continues to be highly prioritized by the Government of the PRC, particularly by encouraging stronger participation of private sector companies.[1]

3. **Insufficient domestic milk production**. The gap between domestic production and consumption of processed milk is forecast to grow from 9.7 million tons in 2014 to 15.4 million tons in 2024. However, the PRC cannot rely on imported milk powder to meet the increasing demand, not only because of impacts on national food security, but also because fresh milk has a higher nutritional value than milk reconstituted from milk powder. As a result, investing in the dairy farming sector is needed to increase the production of high-quality raw milk.

4. **Food safety issues**. The PRC's milk industry has faced serious food safety issues, most notably the melamine incident in 2008.[2] Since then, the central government has made significant strides in food safety management. The Food Safety Law (2009, amended in 2015) stipulates 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 law, relevant regulations, and food safety standards.[3]

5. **Environmental issues**. If not properly managed, the development of the dairy sector could harm the environment. Dairy farms produce waste with a high concentration of pollutants; the waste is often discharged without proper treatment, seriously polluting land and water, and causing significant greenhouse gas emissions. The government has promoted policies that mandate waste treatment but most farms still do not have proper waste treatment facilities (footnote 3).

6. **Large-scale dairy farm development**. To meet the growing demand for quality milk produced locally, the PRC government continues to support the construction of large-scale,

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[1] Asian Development Bank (ADB). 2016. *Country Partnership Strategy: Transforming Partnership: People's Republic of China and Asian Development Bank, 2016–2020.* Manila.

[2] S. McDonald. 2008. Nearly 53,000 Chinese children sick from milk. *Associated Press*. 22 September.

[3] ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of China for the Henan Sustainable Livestock Farming and Product Safety Demonstration Project.* Manila.

modern, and standardized dairy farms.[4] Large dairy farms with more than 100 cows have a competitive advantage over small dairy farms. They are more cost-efficient thanks to economies of scale. They are also more able to invest in quality inputs and management systems. Large dairy processors, such as the Inner Mongolia Yili Industrial Group and the Inner Mongolia Mengniu Dairy Group, tend to source raw milk from modern, large-scale farms that can meet their quality standards and also mitigate the risk of food safety incidents. However, large-scale dairy farming needs to be more environmentally sustainable.

7. **Borrower's selection**. SKX is the fourth-largest dairy farming company in the PRC in terms of herd size, with 90,000 cows as of December 2015.[5] After appraising the industry's largest companies, the project team identified SKX as the most suitable for Asian Development Bank (ADB) support because of its (i) strategic focus on dairy farming (no dairy processing operations) and continuous efforts to improve dairy farm management practices; (ii) research and development operations and scientific approach to dairy cow breeding based on the most advanced frozen semen technologies; and (iii) highly experienced and well-respected management team led by Yang Wenjun, who was the chief executive officer of Mengniu (the second-largest dairy processing company in the PRC, after Yili) during 2006–2012. SKX is committed to adopting international best practices in terms of environmental and food safety management, and to setting a benchmark for the industry.

2. Project Design

8. The project will support SKX's $160 million investment plan during 2017–2018, including capital expenditure (capex) on the environment, food safety, and modern dairy farm expansion.

9. **Environmental capital expenditure**. The project aims to manage the environmental issues associated with animal waste by supporting SKX's best-in-class environmental capex in its 27 farms (as of December 2015) and its new farms (four farms to be developed during 2017–2018). The project will include the construction of (i) solid–liquid separation facilities, (ii) best-in-class manure storage to prevent contamination of surface and groundwater, (iii) organic fertilizer processing facilities, (iv) biogas digesters, (v) multilevel oxidation lagoons, and (vi) wastewater treatment facilities. After undergoing solid–liquid separation, solid waste is used as cow bed padding and for organic fertilizer production. Some recycled liquid waste is used for washing the floors of cow houses and milking parlors. In at least five farms, SKX will install biogas digesters to capture the methane contained in the slurry for use in heating and cooking, or for generating electricity. In all farms, the liquid waste will eventually end up in multilevel oxidation lagoons, where sediments are dredged out regularly and used for organic fertilizer production. The wastewater from the lagoons undergoes further treatment before being recycled for irrigation. SKX still needs to dilute wastewater with freshwater to meet national standards for irrigation water, but this will no longer be required once the wastewater treatment facilities are upgraded. The proposed capex will help SKX comply with ADB's Safeguard Policy Statement (2009) requirements and with the International Finance Corporation's Environmental, Health, and Safety Guidelines for Mammalian Livestock Production.[6]

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[4] Central Committee of the Communist Party of China and Government of the PRC. 2015. *Resolutions on Accelerating Agricultural Modernization by Enhancing Revolution and Innovation*. Beijing.

[5] As of 2015, China Modern Dairy had 225,000 cows, Liaoning Huishan Dairy Group had 180,000 cows, and Inner Mongolia Shengmu High-Tech Animal Husbandry had 106,000 cows.

[6] International Finance Corporation. 2007. *Environmental, Health, and Safety Guidelines for Mammalian Livestock Production.* Washington, DC.

10. **Capital expenditure on food safety**. The project will support SKX's efforts to comply with national and international food safety and quality standards. The project will include investments in (i) healthy feed-processing equipment, (ii) animal health equipment, and (iii) sterilized milking equipment. High-quality feed is a key element contributing to milk safety. Feeding dairy cows with high-quality feed improves their health, reduces the risk of disease and usage of medicine (especially antibiotics), and increases the quality of the milk produced. Investing in sterilized milking equipment is also critical, since the milking process is where the risk of bacterial contamination is the highest. The project will ensure that existing and new farms achieve best-in-class certifications, including the national good agricultural practices and the internationally recognized hazard analysis and critical control point certification.

11. **Capital expenditure on modern dairy farm expansion**. SKX plans to develop at least four new modern dairy farms with about 5,000 cows each during 2017–2018. The new farms will be in the rural areas of the northern provinces and autonomous regions of Hebei, Heilongjiang, Henan, Inner Mongolia, Ningxia Hui, and Shanxi, where the supply of forage crops such as corn silage and alfalfa is good. Young cows for the new farms will most likely be transferred from existing farms. Since cows are not milkable until they reach the age of 24 months, the cost of feeding young cows is included in the dairy farm expansion capex. The project will also include investments in barns, milking parlors, other buildings, and infrastructure.

3. The Sponsor

12. SKX has 21 farms in Inner Mongolia, three in Hebei, and one each in Henan, Ningxia Hu, and Shandong. Founded by Mengniu in 2006 as a dairy cow breeding company, SKX's main business was in frozen semen. In 2012, Yang Wenjun led a management buyout and took control of the company. SKX has since expanded into the dairy farm business. Through organic growth and acquisitions of smaller dairy companies and individual farms, SKX has grown to become the fourth-largest dairy company in the PRC. As of 2015, SKX recorded total revenue of $167 million; earnings before interest, tax, depreciation, and amortization of $59 million; and net profit of $25 million.

B. Development Impact, Outcome, and Outputs

1. Impact

13. The project will promote modern dairy farming with better environmental sustainability and product safety. The project is consistent with the 2015 strategic orientations for the agriculture sector provided by the Central Committee of the Communist Party of China and the PRC government as a contribution to the country's Thirteenth Five-Year Plan (2016–2020), which set policy objectives for the sector, including (i) enhancing environmental protection and waste treatment in agricultural production; (ii) improving the quality of agricultural products and the level of food safety; and (iii) optimizing the "structure" of the agricultural industry by supporting production in certain sectors, such as the livestock sector (footnote 4).

2. Outcome

14. The outcome of the project will be the demonstration of modern dairy farming with stronger environmental sustainability and milk safety. Detailed indicators on waste treatment and milk safety are listed in the design and monitoring framework in Appendix 1. The project will contribute to climate change mitigation by capturing methane in biogas digesters (66,000 tons of carbon dioxide avoided every year from 2020), but also more generally through improved

animal productivity and better feed management arising from modern dairy farming investments and practices. The project will also support job creation and job preservation in rural areas. SKX's farms are located in the rural areas of some of the PRC's poorest provinces, such as Shanxi (24th out of 31 provinces and autonomous regions in terms of gross domestic product per capita), Henan (22nd), Heilongjiang (20th) Hebei (18th), and Ningxia Hu (15th). SKX's workforce is expected to increase from 2,000 in 2015 (of whom 31% are women) to more than 2,600 in 2020 (of whom 35% are women). As of 2015, SKX's employees were 21% Mongolian, 6% Hui, 1% Man, and 3% other minorities. The number of smallholder farmers supplying forage to SKX is also expected to increase from about 15,000 in 2015 to at least 17,500 by 2020.

3. Outputs

15. The outputs of the project will be the successful implementation of (i) an environmental capex plan, (ii) a food safety capex plan, and (iii) a modern dairy farm expansion plan. Detailed indicators are listed in the design and monitoring framework in Appendix 1.

C. Alignment with ADB Strategy and Operations

1. Consistency with Strategy 2020 and Country Strategy

16. The project is aligned with ADB's Midterm Review of Strategy 2020, which emphasizes the need to support food security and agricultural productivity and to promote food safety and quality standards.[7] The project is also consistent with ADB's country partnership strategy, 2016–2020 for the PRC. To support rural development for inclusive economic growth, ADB will assist the PRC in developing suitable methods to (i) modernize agriculture; (ii) promote circular agriculture through the value chain to reduce resource inputs and waste outputs, and control pollution; and (iii) improve food safety, including related infrastructure and capacity development. Through its private sector operations, ADB will support agribusiness projects that enhance productivity, inclusion of smallholder farmers in value chains, and food safety (footnote1).

2. Consistency with Sector Strategy and Relevant ADB Operations

17. The project is also fully aligned with ADB's Operational Plan for Agriculture and Natural Resources, which recommends greater private sector agribusiness investments by ADB to "contribute to public goods, such as food security, food safety, and reduced soil and water pollution, thus benefiting the wider [developing member country] populations."[8] The project builds on lessons learned from ADB's long history in the PRC livestock sector, particularly the need to achieve development impact through private sector agro-enterprises with sufficient scale.[9] It will complement a PRC sovereign project approved in 2015, which will support similar environmental and food safety investments by medium-sized livestock companies (footnote 3), while ADB's proposed nonsovereign assistance targets a larger company, SKX.

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[7] ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

[8] ADB. 2015. *Operational Plan for Agriculture and Natural Resources: Promoting Sustainable Food Security in Asia and the Pacific in 2015–2020*. Manila (page 15).

[9] ADB. 2007. Report and Recommendation of the President to the Board of Directors: *Proposed Loan and Technical Assistance Grant to the People's Republic of China for the Henan Sustainable Agriculture and Productivity Improvement Project*. Manila.

D. Project Cost and Financing Plan

18. The project is estimated to cost $160 million. Table 1 presents the breakdown of project cost.

Table 1: Project Cost

Item			Amount (CNY million)	Amount ($ million)
A.	**Environmental capex**[a]			
	1.	Solid–liquid separation and storage	123	19
	2.	Organic fertilizer facilities	77	12
	3.	Biogas digesters and oxidation lagoons	48	7
	4.	Wastewater treatment facilities	77	12
B.	**Food safety capex**[b]			
	1.	Healthy feed processing equipment	16	2
	2.	Animal heath equipment	15	2
	3.	Sterilized milking equipment	33	5
C.	**Farm expansion capex**			
	1.	Cost of purchasing young cows for new farms[c]	288	44
	2.	Cost of feeding young cows in new farms[d]	160	25
	3.	Barns, milking parlors, buildings, and infrastructure	209	32
		Total	**1,046**	**160**

capex = capital expenditure.
[a] About 90% of the environmental capex is for upgrades to existing farms, and about 10% for new farms.
[b] About 25% of the food safety capex is for upgrades to existing farms, and about 75% for new farms.
[c] In most cases, young cows will be transferred from existing farms at a market-based transfer price.
[d] Since cows are not milkable until 24 months, the cost of feeding young cows is considered a capital expenditure.
Sources: Inner Mongolia Saikexing Breeding and Biotechnology Group; and Asian Development Bank.

19. Table 2 identifies the corresponding sources of funds.

Table 2: Financing Plan

Source	Amount (CNY million)	Amount ($ million)	Share of Total (%)
Debt			
Asian Development Bank	409	62.5	39%
Commercial banks (complementary loan)	409	62.5	39%
Equity			
SKX (internally generated cash)	228	35.0	22%
Total	**1,046**	**160.0**	**100%**

SKX = Inner Mongolia Saikexing Breeding and Biotechnology Group.
Sources: Inner Mongolia Saikexing Breeding and Biotechnology Group; and Asian Development Bank.

E. Implementation Arrangements

20. Table 3 summarizes the implementation arrangements.

Table 3: Summary of Implementation Arrangements

Aspects	Arrangements
Regulatory framework	SKX is subject to the general laws regulating private sector enterprises in the PRC and as they relate to large-scale dairy farming. In particular, SKX is subject to the Environmental Protection Law (2015), the Environmental Impact Assessment Law (2003), and the Food Safety Law (2009, amended in 2015).
Management	SKX is led by a management team with a long experience in the dairy breeding, farming, and processing industry. Yang Wenjun, SKX's chairman, is the former CEO of Mengniu. Under his leadership (2006–2012), Mengniu became the PRC's second-largest dairy processing company. His management skills and rich experience are key factors in driving SKX's success.
Implementation period	SKX plans to develop and build at least four new farms during 2017–2018. Each new farm will be designed to accommodate up to 5,000 heads. It will take about 12 months to complete a farm.
Construction arrangements	The new farms will be located in areas where the supply of forage crops and water is good. Young cows will most likely be transferred from existing herds. Procurement of equipment and civil works will be carried out in line with ADB's Procurement Guidelines (2015, as amended from time to time) as they apply to private sector projects. ADB's technical consultant has reviewed and validated the cost of the new farms and found them to be in line with market standards.
Operations arrangements	Raw milk is sold under long-term contracts with large dairy processors, similar to the contracts in place for existing farms. SKX will manage its dairy farm operations according to the best industry standards, including ADB's Safeguard Policy Statement (2009) requirements, and will adopt GAP and HACCP food safety certifications.
Performance monitoring	SKX will report on key performance indicators, including financial, safeguard, gender, and development indicators (i.e., output and outcome targets), on at least an annual basis.

ADB = Asian Development Bank, CEO = chief executive officer, GAP = good agricultural practices, HACCP = hazard analysis and critical control point, PRC = People's Republic of China, SKX = Inner Mongolia Saikexing Breeding and Biotechnology Group.
Sources: Inner Mongolia Saikexing Breeding and Biotechnology Group; and Asian Development Bank.

F. Unique Features

21. The project is ADB's first direct nonsovereign assistance to a livestock company and ADB's first private sector agribusiness project with a specific focus on environmental protection and food safety, which are among the PRC's top priorities for the sector.

III. THE PROPOSED ADB ASSISTANCE

A. The Assistance

22. ADB proposes to provide a loan facility of up to $125 million equivalent to SKX, consisting of an A-loan of up to $62.5 million equivalent in US dollars and yuan and a complementary loan of up to $62.5 million equivalent in US dollars and yuan. ADB will fund the A-loan from its ordinary capital resources, and the complementary loan will be funded by the PRC banks or international commercial banks with local branches in the PRC, with ADB acting as the lender of record. SKX will use the loan proceeds to finance those of its subsidiaries that will be implementing different components of the project.

B. Value Added by ADB Assistance

23. ADB assistance will add value on several fronts:

(i) **Demonstration effect**. ADB will help SKX set environmental and food safety benchmarks for the PRC's dairy farming industry. This will encourage other large and medium-scale dairy farming companies to follow this model.

(ii) **Long-term financing**. Environmental and food safety capex have a payback period that is hard to quantify, since they do not directly contribute to increased

revenue but rather help mitigate risks and contribute to positive. Long-term financing is required to encourage private sector to make these investments.

(iii) **Multiple projects at once**. Through a single corporate loan, ADB can finance up to 31 farms in seven provinces and autonomous regions, ensuring a wide impact.

(iv) **Cofinancing mobilization**. Domestic and international commercial banks will be encouraged to provide long-term financing to SKX through complementary loans.

(v) **Lessons learned for future projects**. Governments and private sector companies from other developing member countries can learn from this project to promote sustainable dairy farming and milk safety in their country.

IV. POLICY COMPLIANCE

A. Safeguards and Social Dimensions

24. In compliance with ADB's Safeguard Policy Statement (2009), the project is classified as category B for environment and category C for involuntary resettlement and indigenous peoples. Since the proposed ADB assistance is a corporate loan that is not earmarked for financing specific subprojects but will finance certain types of capex across all existing and new farms, the requirements for general corporate finance projects will apply. The potential environmental and social impacts of the project have been identified, and effective measures to avoid, minimize, mitigate, and compensate for adverse impacts are incorporated in the safeguard reports and plans. Siting of the dairy farms is done in coordination with the local government to ensure that it conforms with local land use plans and avoids legally protected areas. Potential risks and impacts during construction are mostly site-specific and short-term, and can be effectively managed by good engineering construction and housekeeping practices implemented through a construction environmental management plan. During operation, the new waste management facilities will contribute to address concerns on solid waste and wastewater disposal, which has the potential for surface and groundwater pollution. Since the farms will be located away from inhabited areas, nuisance, noise, and odor impacts will be mitigated.

25. No involuntary resettlement impacts are envisaged because SKX will avoid forest and basic farmland and will lease state-owned land or unused and wasteland from land owners and villages on a willing-lessor–willing-lessee basis. Future expansion activities are expected to be carried out in the northern part of the PRC, which has sufficient land resources. In unavoidable cases where basic farmland will be used, village collectives typically provide replacement land to these villagers to minimize impacts on their livelihoods. Impacts on indigenous peoples are unlikely, and SKX's operations are not expected to have impacts on identity, culture, and natural resource-based livelihoods. In ethnic minority autonomous regions where SKX operates, SKX will avoid leasing land used by ethnic minority groups. The company will offer jobs to willing and qualified workers, including those from ethnic minorities, who will benefit from the additional income and new livestock breeding skills and information.

26. SKX engaged a qualified and experienced external expert to conduct a corporate audit on the company's existing environmental and social policy, procedures, and operations. The audit found that corrective action is required to ensure adequacy and compliance of the procedures and operations with ADB's Safeguard Policy Statement and other social requirements. SKX will develop and adopt an integrated environmental and social management system (ESMS) satisfactory to ADB prior to the first disbursement by ADB. SKX is committed to boosting its institutional capacity and procedures to better manage the project's social and environmental impacts, and has set up a dedicated environment and social unit with qualified staff to manage ESMS implementation. It will also conduct ESMS training sessions for staff.

27. SKX and its contractors will comply with national labor laws and, pursuant to ADB's Social Protection Strategy (2001), will take measures to comply with internationally recognized core labor standards.[10] SKX will report regularly to ADB on (i) its and its contractors' compliance with such laws and (ii) the measures taken. The project is categorized as with some gender elements. SKX will increase the employment of women from 31% in 2015 to 35% in 2020, and include provisions prohibiting sexual harassment in its human resource policy. Information disclosure and consultations with affected people will be conducted in accordance with ADB requirements.

B. Anticorruption Policy

28. SKX was advised of ADB's policy of implementing best international practices relating to combating corruption, money laundering, and the financing of terrorism. ADB will ensure that the investment documentation includes appropriate provisions prohibiting corruption, money laundering, and the financing of terrorism, and remedies for ADB in the event of noncompliance.

C. Investment Limitations

29. The proposed loan is within the medium-term, country, industry, group, and single-project exposure limits for nonsovereign investments.

D. Assurances

30. Consistent with the Agreement Establishing the Asian Development Bank (the Charter),[11] ADB will proceed with the proposed assistance upon establishing that the Government of the PRC has no objection to the proposed assistance to SKX. ADB will enter into suitable finance documentation, in form and substance satisfactory to ADB, following approval of the proposed assistance by the Board of Directors.

V. RECOMMENDATION

31. I am satisfied that the proposed loan facility would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of up to $125,000,000 equivalent in US dollars and yuan—comprising (i) an A-loan of up to $62,500,000 equivalent in US dollars and yuan from ADB's ordinary capital resources and (ii) a complementary loan of up to $62,500,000 equivalent in US dollars and yuan—to Inner Mongolia Saikexing Breeding and Biotechnology Group for the Sustainable Dairy Farming and Milk Safety Project in the People's Republic of China, with such terms and conditions as are substantially in accordance with those set forth in this report, and as may be reported to the Board.

Takehiko Nakao
President

7 June 2016

[10] ADB. 2003. *Social Protection.* Manila (adopted in 2001).
[11] ADB. 1966. *Agreement Establishing the Asian Development Bank.* Manila.

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with
Environmental protection and waste treatment in agricultural production enhanced[a]
Quality of agricultural products and level of food safety improved[a]
Construction of modern and standardized livestock farms supported[a]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Modern dairy farming with stronger environmental sustainability and milk safety demonstrated	By 2020: a. Annual production of organic fertilizer increases to 210,000 tons (2015 baseline: 150,000 tons) b. CO_2 emissions avoided from methane capture in biogas digesters reached 66,000 tons per year (2015 baseline: 0) c. BOD5 and COD levels in discharged wastewater decrease to 50 mg/l and 250 mg/l, respectively (2015 baseline: 150 mg/l and 400 mg/l, respectively)[b] d. Percentage of wastewater diluted before being used for irrigation decreases to 10% (2015 baseline: 100%)[b] e. Maximum number of microorganisms in raw milk decreases to 50,000 CFU per ml (2015 baseline: 200,000 CFU per ml)[c] f. Maximum number of somatic cells in raw milk decreases to 250,000 per ml (2015 baseline: 600,000 per ml)[d] g. Number of workers employed by the dairy farms increases to 2,600, of whom 35% are women (2015 baseline: 2,000, of whom 31% are women) h. Number of smallholder farmers supplying forage to SKX increases to 17,500 (2015 baseline: 15,000)	a–h. SKX's annual monitoring report to ADB	Market risks, including price volatility and competition from other dairy farms targeting similar customers Operational risks, including food safety issues, unexpected animal diseases, environmental issues, complaints from local communities, and inability to source suitable farm managers
Outputs 1. Environmental capex plan successfully implemented	By 2019: 1a. Number of farms equipped with solid–liquid separation facilities increases to 31 (2015 baseline: 17) 1b. Number of farms equipped with operating biogas digesters increases to 5 (2015 baseline: 0) 1c. Total capacity of high-quality manure storage facilities increases to 150,000 m^3 (2015 baseline: 50,000 m^3) 1d. Total capacity of organic fertilizer processing facilities increases to 480,000 tons per year (2015 baseline: 150,000 tons per year)	1–3. SKX's annual monitoring report to ADB	Implementation risks, including inability to secure the land, delays in construction, and lack of road and utility connectivity because of difficulties in coordinating with the local government

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	1e. Number of farms with multilevel oxidation lagoons increases to 31 (2015 baseline: 17) 1f. Total capacity of wastewater treatment facilities increases to 4,400 tons per day (2015 baseline: 3,200 tons per day)		
2. Food safety capex plan successfully implemented	2a. Production capacity of high-quality raw milk increases to 500,000 tons per year (2015 baseline: 220,000 tons per year) 2b. Number of quality control labs increases to 15 (2015 baseline: 5) 2c. Number of farms with GAP and HACCP certifications increases to 31 (2015 baseline: 0)		
3. Modern dairy farm expansion plan successfully implemented	3a. Number of high-quality sustainable dairy farms increases to 31 (2015 baseline: 27) 3b. Number of high-quality cows increases to 110,000 (2015 baseline: 90,000)		

Key Activities with Milestones

Output 1: Environmental capex plan successfully implemented
1.1 Signing achieved (30 September 2016)
1.2 First disbursement made (31 December 2016)

Output 2: Food safety capex plan successfully implemented
2.1 Signing achieved (30 September 2016)
2.2 First disbursement made (31 December 2016)

Output 3: Modern dairy farm expansion plan successfully implemented
3.1 Signing achieved (30 September 2016)
3.2 First disbursement made (31 December 2016)

Inputs

Debt
ADB (A-loan): $62.5 million equivalent in US dollars and yuan
Commercial banks (complementary loan): $62.5 million equivalent in US dollars and yuan

Equity
Internally generated cash (and equity fund-raising): $35 million

ADB = Asian Development Bank, BOD5 = biochemical oxygen demand of wastewater during decomposition occurring over a 5-day period, capex = capital expenditure, CO_2 = carbon dioxide, COD = chemical oxygen demand, CFU = colony forming units, EU = European Union, GAP = good agricultural practices, HACCP = hazard analysis and critical control point, m^3 = cubic meter, mg/l = milligram per liter, ml = milliliter, PRC = People's Republic of China, SKX = Inner Mongolia Saikexing Breeding and Biotechnology Group, US = United States.

[a] Central Committee of the Communist Party of China and Government of the PRC. 2015. *Resolutions on Accelerating Agricultural Modernization by Enhancing Revolution and Innovation*. Beijing.

[b] These targets are in line with the International Finance Corporation's Environmental, Health, and Safety Guidelines for Mammalian Livestock Production.

[c] The EU and US standard is <100,000 CFU per ml.

[d] The EU standard is <400,000 somatic cells per ml, while the US standard is <750,000 somatic cells per ml.

Source: Asian Development Bank.