

<b>1. Project Data:</b>		<b>Date Posted :</b> 06/21/2013	
<b>Country:</b>	China		
<b>Project ID:</b>	P086629	<b>Appraisal</b>	<b>Actual</b>
<b>Project Name:</b>	Cn-heilongjiang Dairy	<b>Project Costs (US\$M):</b>	US\$M178.95
<b>L/C Number:</b>	L4815	<b>Loan/Credit (US\$M):</b>	US\$M100.00
<b>Sector Board:</b>	Agriculture and Rural Development	<b>Cofinancing (US\$M):</b>	US\$M5.50
<b>Cofinanciers:</b>		<b>Board Approval Date:</b>	01/24/2006
		<b>Closing Date:</b>	12/31/2010
<b>Sector(s):</b>	Animal production (69%); Agricultural extension and research (27%); Crops (3%); Sub-national government administration (1%)		
<b>Theme(s):</b>	Other rural development (29% - P); Rural services and infrastructure (29% - P); Climate change (14% - S); Rural policies and institutions (14% - S); Technology diffusion (14% - S)		
<b>Prepared by:</b>	<b>Reviewed by:</b>	<b>ICR Review Coordinator:</b>	<b>Group:</b>
John R. Eriksson	Robert Mark Lacey	Soniya Carvalho	IEGPS1

## 2. Project Objectives and Components:

### a. Objectives:

According to the Project Appraisal Document (PAD, p.4), the Project Development Objectives are: (1) "to improve the financial viability of existing and new dairy operations in selected areas of Heilongjiang province" and (2) "to demonstrate innovative technologies to reduce GHG emissions and increase carbon sequestration."

According to the Loan Agreement, the Project Objective is to: "(i) improve the financial viability of dairy operations in selected areas of Heilongjiang Province; and (ii) demonstrate innovative technologies to reduce greenhouse gas emissions and increase carbon sequestration in selected areas of Heilongjiang Province."

The Loan Agreement definition is adopted.

### b. Were the project objectives/key associated outcome targets revised during implementation?

No

### c. Components:

The project had four main components:

#### 1. Dairy Production Development (US\$148.2 million; US\$ 118.12 million actual)

Increase scale, efficiency and quality of milk production through household and dairy park-based production programs. There were six separately costed sub-components:

- (1) Household Dairy Farms (US\$88.9 million; US\$68.54 million actual)
- (2) Milk and Collection Stations (US\$6.7 million; US\$5.93 million actual)
- (3) Dairy Parks (US\$ 28.9 million; US\$24.36 million actual)
- (4) Demonstration Farms (US\$21.3 million; US\$18.98 million actual)
- (5) Training and Technology Transfer (US\$2.1 million; US\$0.27 million actual)
- (6) Dairy Farmer Association (US\$0.3 million; US\$0.05 million actual)

## **2. Dairy Cattle Breed Improvement (US\$6.5 million; US\$4.35 million actual)**

This component was intended to improve the genetic base of the Heilongjiang dairy stock and thereby increase the efficiency of milk production and milk quality. It was to be achieved by establishing a comprehensive Dairy Herd Improvement Program, including recording of milk and livestock management data, bull breeding and progeny testing. The program was to be implemented in the following steps: (1) initial capacity building; (2) broadening and accelerating genetic improvement; and (3) establishing a system for local genetic evaluation.

## **3. Environmental Protection and Climate Change Mitigation (\$9.5 million; \$8.87 million actual)**

The aim of this component was to demonstrate innovative technologies to increase carbon sequestration and reduce greenhouse gas (GHG) emissions resulting from the expansion of livestock production in Heilongjiang. The project would finance specialized equipment, civil works, technical assistance and training of staff and project beneficiaries to pilot innovative technologies in: (a) pasture improvement; (b) treatment of crop residues to improve their usage in animal feeding and decrease methane emissions and reduce on-field burning of residues; (c) treatment of animal manure to reduce methane emissions and convert it into a salable fertilizer; and (d) research programs to assess climate change experimental technologies.

## **4. Project Management and Support (\$1.1 million; US\$0.6 million actual)**

This component was intended to improve the management, monitoring and evaluation of the project through financing technical assistance, training and equipment for the Provincial Project Management Office and the county Project Management Offices.

### **d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:**

#### ***Project cost.***

US\$33.36 million was scaled back as part of restructuring after the Midterm Review in November 2009, but the project objective was not changed. The actual total project cost at US\$132.19 million (including US\$0.25 million front end fee) was US\$46.76 million less than the estimate at appraisal (or 73.9% of the total cost at appraisal).

#### ***Financing***

The operation was financed by an IBRD loan of US\$56.91 million and a grant from the Italian Government of US\$5.32 million. The share of total financing accounted for by the IBRD declined from 55.9% at appraisal to 43.1% actual (ICR, Annex 1, p. 24R). This resulted from the scaling back of the project and the cancellation of a portion of the IBRD loan. Conversely, the share contributed by the Italian Grant increased from 3.1% at appraisal to 4.0% actual and the beneficiary share (Government central and sub-borrowers and local farmers) increased from 41.0% at appraisal to 52.9% actual (p.24, ICR).

At restructuring of the project in December 2011, as a result of lower than anticipated farmer demand and restrictions on semen imports and the movement of animals, as well as the slow pace of project implementation, the borrower requested a reduction in project scope and a cancellation of US\$30 million of the original IBRD loan of US\$100million. At the time of the final disbursement on April 30, 2012, an additional US\$11.38 million was canceled owing to weak demand or assessed inability to pay by some counties (ICR, pp.4-5). (This implies a final IBRD loan amount of US\$58.62 million, which exceeds by US\$1.71 million the IBRD loan amount of \$56.91 million shown in ICR, Annex 1, an unexplained discrepancy).

#### ***Borrower contribution***

The borrower contributed US\$24.29 million; sub-borrowers, US\$26.48 million; and farmers, US\$19.19 million. These contributions were, in each case, over 90% of the respective appraisal estimates of US\$25.5 million, US\$27.8 million, and US\$20.2 million (ICR Annex 1).

#### ***Dates***

To provide additional time to make up for previous implementation delays, there was a one-year extension of the project, from 12/13/2010 to 12/31/2011. Implementation had been delayed at various points due to external events and shocks (decline in farm gate prices shortly after project approval, dampening farmer investment in dairy production; a global economic downturn denting confidence and demand for dairy cattle; major contamination of milk powder with industrial melamine in October 2008; a ban on movements of livestock within and between provinces from December 2009 to July 2010). There were also delays in procurement, a result of using International Competitive Bidding (ICB), which turned out not to be feasible for procurement of large numbers of livestock. During implementation, ICB was over time replaced by the Community Participation in Procurement methodology, which turned out to be more cost-effective, expeditious and preferred by farmers. (ICR, pp.5, 9)

### **3. Relevance of Objectives & Design:**

#### **a. Relevance of Objectives:**

##### **Relevance of Objectives is rated Substantial .**

The objectives of the operation remained relevant to China's economic and social development priorities with regard to the dairy industry at project closure . The demand for dairy products was projected to continue to grow relatively rapidly . Notwithstanding market fluctuations, especially for milk, dairy production was assessed as feasible and promising for small farmers, especially if they joined in associations that gave them some protection against market fluctuations. The Bank's Country Partnership Strategy (CPS) for 2013-2016 points to continuing Chinese priority being given to reducing poverty in rural areas and Bank priority to assistance focused on increasing agricultural productivity, identifying improved technology and farmers' associations among the means to achieve this goal .

#### **b. Relevance of Design:**

##### **The Relevance of Design is rated Substantial .**

The first project objective - to improve the financial viability of existing and new dairy operations in selected areas of Heilongjiang province - is clear and the project components were designed to achieve it . The dairy production and breeding and genetics components aimed at improving the efficiency and quality of production, thus contributing to the achievement of this first project objective . While Heilongjiang was already the major milk producing province in China, it lacked productive technology and efficient organization . This included identified weaknesses in the quality of genetic stock and breeding services, adequacy of infrastructure and management, and access to long term credit for investment, especially for smaller scale producers . Addressing these weaknesses, as the project intended, had the potential to raise smallholder incomes (perhaps also reducing rural-to-urban migration, an objective of Government).

The second project objective - to demonstrate innovative technologies to reduce Green House Gas (GHG) emissions and increase carbon sequestration - is also clearly stated and the climate change mitigation component contained activities that would contribute to the objective . These included the installation of biogas generators, composting units to produce organic fertilizer and drying units to make fuel bricks, together with leak proof storage facilities .

However, there were several potentially adverse exogenous factors which were only partially taken into account in the design of the components for the first objective, but which could have potentially affected the financial viability of dairy production. Important among these could be short term external shocks, which may cause sharp price fluctuations in the dairy market . These in turn could affect the demand by farmers for the improved livestock and techniques offered by the project . Introduction of minimum support prices early in the project could have been expected to mitigate such price fluctuations, but they did not feature in the design . Design might also have anticipated and addressed the consequences of other policies and measures that could have been expected to influence farmer incomes, such as those regarding semen imports, movement of animals, livestock procurement issues and alternatives (International Competitive Bidding vs . Community Participation in Procurement) and the timing of delivery of animals . Design did provide for project support for the formation of dairy farmers ' associations in order to give farmers a measure of influence over some exogenous factors .

#### **4. Achievement of Objectives (Efficacy):**

The first objective, to improve the financial viability of dairy operations in selected areas of Heilongjiang Province, is rated **Modest**.

##### Outputs

Smallholder dairy farms, dairy parks and demonstration farms established . From a baseline of zero, the original targets set at appraisal were 5,500 smallholder farms, 50 new and 20 existing dairy parks, and 7 demonstration farms. These were reduced at restructuring to 4,000, 40 and 1, and 5, respectively. According to the team, the project was scaled back by almost 25% after the midterm review. Actual achievements at closure were 3,600 smallholder farms, 41 new and 1 existing dairy parks, and 5 demonstration farms. While these achievements represented a reduction from original smallholder farm targets of 35% and from dairy park targets of 40%, the respective reductions from restructured targets were 10% (4,000 vs. 3,600) and an increase of 2% (41 vs. 42).

Number of dairy farmer associations established . From a baseline of zero, the original target was 100 associations. This was scaled back to 82 and the actual achievement was 84 associations.

Number of technicians and farmers trained . From a baseline of zero, the original target was 1,070 technicians and 12,750 farmers trained. These were scaled back to 700 and 8,000 respectively, and the actual achievements were 1,000 technicians and 9,000 farmers trained.

Number of cows under milk recording . From a baseline of zero, the original target was 150,000. This was scaled back to 120,000 and the actual achievement was 130,000.

A sustainable system of milk recording , with a plan for bull selection and progeny test, was to be put in place . At baseline the existing system was not functional . The original target was for a sustainable system of bull selection and progeny testing to be *functioning* . At restructuring, the target was revised to be : "A sustainable system of milk recording is functional, with a plan for bull selection and progeny test in place ." This was achieved.

Number of crop treatment for feed (silage) facilities established . From a baseline of zero, the original target was 5

facilities, which was raised to 9 at restructuring and the actual achievement was 9 facilities.

Number of research topics funded. From a baseline of zero, the original target was 6 topics, which was raised to 16 at restructuring and the actual achievement was 16. A listing of the research topics is not included.

Anticipated increase in dairy productivity at household and parks dairy levels achieved. This target is shown as another output indicator for the first objective. It is identical to the outcome indicator discussed below, with the same baseline, targets and achievements, except that quality is not mentioned.

#### Outcomes

Targeted dairy farmers participating in smallholder and Dairy Park -based milk production sell more high quality milk.

The ICR reports an achievement of 17.5 liters per day (Results Framework Analysis, pp. vi, vii, main text p.13) against a target of 15.5 liters and a baseline of 13 liters (13% above target and 35% above base). The latter two figures are consistent with the PAD, which indicates a baseline of 13 liters and a target of 15.5 to be reached by project year 5 (2011) (Annex 3, p.28). The derivation of these figures is not explained and there are some inconsistencies and gaps. For example, the ICR Results Framework Analysis for this indicator (p.vi) states, contrary to the PAD, that "no baseline was set, so (a) productivity baseline (13 litres per day) was used as proxy" and that "no target was specified in the PAD" (but rather was "added at restructuring in December 2010"). The ICR points out that the magnitude of this achievement is misleading since the number of dairy units was significantly lower than had been targeted at project design (p.13 and as indicated under Outputs, above). The ICR also draws explicit attention to the absence of quality measurement: "Note that no measure for quality was included" (p.vi).

The second objective, to demonstrate innovative technologies to reduce GHG emissions and increase carbon sequestration in selected areas of Heilongjiang Province, is rated **Modest**.

#### Outputs

Number of manure/waste treatment plants established. According to "Intermediate Outcome Indicator 6," in the ICR Results Framework Analysis (p.viii), 16 plants were established (original target of 20 plants, scaled back at restructuring to 16 from a baseline of zero). (The Safeguards section reports that by the ICR's completion date in June 2012 all plants were "near completion" (p.11). According to "PDO Indicator 3" of the Framework (p.vi), 16 "targeted dairy demonstration farms and parks were equipped with functioning manure treatment units and selected pastures" (original target of 27 (7 demo. farms & 20 parks) from a baseline of zero). From these two not entirely consistent reports, it is impossible to distinguish treatment plants "established" from those "functioning" (which might be interpreted as an "intermediate outcome"). Moreover, even if all 16 plants were functioning, no information is provided as to how effective they were in reducing GHG emissions or sequestering carbon, which would represent the intended outcomes for this objective.

### **5. Efficiency:**

Efficiency is rated **substantial**. As compared with the ex ante economic rate of return (ERR) estimated by the PAD at 23%, the ex-post ERR was estimated at 17%. The latter took into account incremental benefits and costs of milk production of individual farms and dairy parks financed by the project. The ICR concludes that this value indicates that the project is viable (compared, according to the project team, with the commonly assumed opportunity cost of capital of 12%). Other benefits deemed significant by the ICR (p.16) but not quantified include (i) improved pasture management, animal feeding practices, and use of treated animal manure as a saleable fertilizer; (ii) increased employment created in the dairy parks, milking stations, and demonstration farms; (iii) improved breeds and better artificial insemination services for the province's dairy herd; (iv) social benefits derived from the establishment of farmers' associations and (v) benefits from carbon sequestration and GHG emission reduction. Financial analysis was carried out for the two major types of production entities. The model for individual households is based on an initial representative investment of five cows and that for dairy parks is based on an average capacity of 300 cows. The FRR for the representative household farm is 16%, while that for dairy parks is 17%, which the ICR deems financially profitable and attractive to farmers.

However, as noted at the beginning of Section 4, the scale of the project was reduced substantially from effectiveness to closure. There are several reasons why farmer participation did not meet expectations. Farmers selected for the project were those with the requisite skills in dairy management, though with few animals (generally less than 10). These requirements may have excluded the poorest households which likely did not have these skills. Project household members from these villages had generally higher educational attainment than nonproject households (ICR, p.17). Moreover, according to the project team, by the time of the midterm review, county governments were concerned that many project farmers were no longer as willing or able to pay back debt as they were at project inception.

Project closure was delayed for a year owing to the implementation delays described in section 2-d above.

Taking these considerations into account, efficiency is rated **substantial**.

If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation :

a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation :

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	Yes	23%	94%
ICR estimate	Yes	17%	93%

\* Refers to percent of total project cost for which ERR/FRR was calculated.

#### 6. Outcome:

The relevance of the objectives is rated substantial owing to the priority given by the Government to greater milk production. The relevance of design is rated substantial given the clear linkages between the two project objectives and the components and sub-components. The achievements of both the productivity and the environmental objectives are considered modest. Achieved milk output increases fell significantly below target levels and quality improvement, a key part of the objective, was not measured. Manure treatment plants were established but it is not possible to tell the extent to which they were functioning, let alone effectively reducing GHG emissions and sequestering carbon. Project efficiency is considered substantial, based on satisfactory rates of return, notwithstanding the one-year delay in project closing. Taking these component ratings into account, the rating of Development Outcome is **Moderately Unsatisfactory**.

a. **Outcome Rating** : Moderately Unsatisfactory

#### 7. Rationale for Risk to Development Outcome Rating:

Risk to development outcome is rated **significant**. Production units financed by the project have proven resilient to market price fluctuations, especially the larger scale dairy parks. Minimum support prices were introduced following the shock to the dairy industry from the contamination of powdered milk by melamine in another part of the country in 2008. Despite this shock and continued fluctuations in milk prices, demand in the medium and longer term for milk is expected to continue to rise with increased incomes. The development of farmers' associations formed under the project also strengthened collaborative efforts to manage project investments and resources effectively, and to mitigate future risks. The major fiscal impact of the project after implementation completion was expected to be that of covering operation and maintenance (O&M) costs of the program, which were reportedly adequately covered during project implementation. The provincial government made a commitment to continue O&M cost coverage through budget allocations and is allocating adequate financial resources for both its regular Operations and Maintenance and Research and Development programs.

Though at project completion all dairy park waste treatment facilities built under the project had been at least financed and planned and in some cases implemented, and by the issuance of the ICR in June 2012, all installation was reported as "near completion," significant risks remained as to their proper operation and maintenance owing to concerns about adequate compliance enforcement. It is important that these waste treatment facilities be fully operational and maintained, as agreed with the Provincial Environmental Bureau. It is the responsibility of the local Environment Protection Bureaus to monitor pollution from the production units and ensure that national standards are enforced.

a. **Risk to Development Outcome Rating** : Significant

#### 8. Assessment of Bank Performance:

##### a. Quality at entry:

The rationale for Bank involvement was well articulated at the outset and reflected in the project design. Several lessons were drawn from the Heilongjiang Agricultural Development Project, including participation by beneficiaries and other stakeholders, a key role to private enterprise and individuals, building of technical and managerial capacity of farmers and agency staffs, establishing farmers' associations, drawing from successful Bank experience with financing Self-Financing Irrigation and Drainage Districts in China. The Bank's technical inputs during project preparation and appraisal were adequate and good collaboration with the counterparts was

maintained.

However, there were significant weaknesses in project design at quality at entry :

- Weak risk analysis, which neglected the possibility of short term external shocks and the impact that this would have on smallholder demand for livestock;
- The major expenditure to be supported by IBRD funds was for dairy cattle but the Bank had relatively little experience in *procurement* of livestock, which presented distinct challenges . These included limitations of International Competitive Bidding for cattle procurement and no operational procedures for Community Participation in Procurement as an alternative;
- Overly optimistic targets for project outputs, including under the Breed Improvement component;
- Weak M&E design with inconsistent indicators and some outcome indicators that were difficult to measure and attribute to project interventions (see section 10 below).

**Quality-at-Entry Rating :** Moderately Unsatisfactory

#### **b. Quality of supervision:**

The supervision missions were composed of both international and local professionals with technical expertise and knowledge of the dairy sector in China . The missions identified and highlighted key implementation issues and worked with the Provincial Project Management Office to find solutions . Supervision focused on three main issues:

(1) Procurement. The Bank worked closely with the Provincial Office to develop a workable approach for the procurement of cattle. In 2007 the Bank supervision team and the Country Office agreed on Community Participation in Procurement procedures within the framework of Bank policy . In 2010, in response to the Government's request and after a favorable review of a procurement mission, the Bank put all remaining cattle procurement under the Community Participation approach .

(2) Waste management. At the mid-term review, a specialist provided detailed advice on suitable technologies to address this issue. A follow up mission in June-July 2010 focused on it exclusively and it was agreed to use an Italian Grant Fund during the last year of the project, 2011, to finance waste management investments at dairy parks supported under the project .

(3) Monitoring and evaluation and data. The supervision team repeatedly drew attention to the need for reliable and accurate data. The midterm review was delayed because the supervision team insisted that the midterm socio-economic survey be completed. The quality of data was weak from the Provincial Project Management Office throughout the project, including basic output indicators . However, the studies executed at the Midterm Review and after project completion provided a basis for measuring project performance and outcomes .

**Quality of Supervision Rating :** Satisfactory

**Overall Bank Performance Rating :** Moderately Unsatisfactory

### **9. Assessment of Borrower Performance:**

#### **a. Government Performance:**

The Government provided a policy enabling environment at both macroeconomic and sectoral levels for achieving project development objectives . Financial incentives were instituted for dairy operations, including abolishing agricultural taxes and providing better access to credit and technical services, while at the sector policy level, the government at both central and local levels formulated policies, including introduction of support prices after the melamine scandal, to promote dairy sector development . During project preparation, the Provincial Government committed adequate financial and human resources to work with the Bank team to set up a project management structure from provincial down to the township level, following previous Bank -financed project experience in the province. The Government also committed sufficient public resources to ensure efficient operation and maintenance of the artificial insemination and breeding improvement program . However, government performance could have been improved in the following areas : (i) changing the cost recovery policy for semen imports under the project and incorporating them on a non -subsidized basis into the market system; and (ii) enforcing more strict environmental controls regarding animal waste management and disposal .

**Government Performance Rating** Moderately Satisfactory

#### **b. Implementing Agency Performance:**

Despite the unexpected external shocks during project implementation, the county project management

offices endeavored to address implementation issues, such as the change of procurement system and transition from households to dairy parks. The Offices also developed operational manuals and conducted training for procurement and financial management and generally maintained good working relationships and communication with the Bank. However, they were not very effective in (i) following up closely with development of animal waste treatment and disposal; (ii) according priority to developing an adequate M&E system and providing consistent implementation progress reports on a regular basis; (iii) working more closely with the financial bureau to monitor the arrangements for on-lending arrangements; (iv) making timely requests for government interventions for the use of imported semen; and (v) adequately staffing the Provincial Project Management Office. Moreover, all senior Provincial Project Management senior staff were reassigned in October 2010, resulting in the Office consisting of a temporary, skeleton staff under a new director for the final year of the project.

**Implementing Agency Performance Rating :** Moderately Unsatisfactory

**Overall Borrower Performance Rating :** Moderately Unsatisfactory

## **10. M&E Design, Implementation, & Utilization:**

### **a. M&E Design:**

A Socio-economic and Production Survey was undertaken by consultants in eight selected villages in the province in 2004 with the aim of providing "indicators and measurements to evaluate the effects of the project."

Notwithstanding this survey, M&E design had the following weaknesses: (i) some indicators (e.g. outcome indicators on carbon sequestration and reduced greenhouse gasses) were difficult to measure and were without a methodology linking them to outcomes; (ii) indicators included in the Results Framework did not adequately capture the key performance indicators, which were inconsistent between the PAD main text and the Results Framework; (iii) many key performance indicators lacked baselines and targets; and (iv) key indicators, such as production and sales of high quality milk and increases in income of participating farmers, had neither baseline nor target values.

### **b. M&E Implementation:**

There is no evidence that the above shortcomings were corrected during implementation.

- Socio-economic surveys were to be undertaken on an annual basis (PAD, p.8). The ICR provides no evidence that these surveys took place on a periodic basis.
- A baseline survey undertaken after loan effectiveness in June 2006 presented very limited information related to key performance indicators or the requirement for redesigned key performance indicators. The survey provided only limited useful data and virtually no social information.
- The required semi-annual progress reports were not submitted regularly and they contained some inconsistent data on physical achievements.
- Some data from these reports, even at the output level, were not comparable and varied year on year.
- The Provincial Project Monitoring Office was expected to recruit an M&E specialist to supervise reporting, an expanded baseline survey and subsequent annual surveys as well as data gathering, processing and analysis. The specialist would also have been responsible for ensuring timely submission of reports from the counties and compilation of semi-annual reports.
- The specialist was recruited at only a late stage of project implementation.
- Consequently, there was no development of the M&E system beyond simple monitoring of physical progress and coverage.
- A socioeconomic survey was completed, after some delay, at the Midterm Review in November 2009, but there is no indication of its quality or the extent to which it compensated for other M&E shortcomings (however, the ICR asserts that it led to two shifts in project approaches - see below).
- Aside from the Mid-Term Report, the regular M&E system provided little information (except dairy productivity) on the impact and quality of implementation in regard to items such as farmers' incomes, impact of study tours or progress of adaptive research funded by the project.
- At the project close in December 2011, further information on outcomes was collected, but not through a detailed survey. In part to make up for this shortfall, the Bank team at the mid-term review included an economist who completed a detailed financial and economic analysis of the dairy production models supported under the project. This was used to determine whether the first project development objective --to improve the financial viability of dairy operations in Heilongjiang-- was on track. This analysis was repeated at project close, as summarized in section 5 above.

### **c. M&E Utilization:**

. The M&E system described above could not for the most part be used for decision making or allocation of

resources. The socio-economic survey conducted at mid-term provided more detailed information on farmers' perceptions of the project and how they could benefit. According to the ICR (p.11) this led directly to two developments: i) a shift in the balance of support to individual household farms toward dairy parks; and (ii) a shift towards increasing the share of Community Participation in Procurement in the procurement of cattle.

**M&E Quality Rating :** Modest

## 11. Other Issues

### a. Safeguards:

The project was classified as Category "B" for environmental assessment purposes. According to the PAD, two safeguards policies were triggered: Environmental Assessment (OP 4.01) and Involuntary Settlement (OP 4.12)

#### *Environment*

The main environmental issue during project implementation was the handling and management of livestock waste. The issue of waste management was frequently stressed by the Bank during supervision missions as many investments in dairy parks were observed during project implementation to be lacking proper waste management infrastructure. Project compliance with OP4.01 in this regard was not consistent, though there was a reported improvement in the final year of project implementation when many livestock waste management facilities were financed. The ICR team concluded that the project was in compliance with OP 4.01 (p.11), but at the close of the project not all facilities were fully installed. By June 2012 it was reported that installation was near completion. The adequacy of enforcement of waste management regulations remained a concern at project closure.

Due to reforms in the sector (partly as a result of the melamine contamination scandal which was uncovered in 2008), there has been a movement towards larger scale units where food safety concerns are more easily addressed. This resulted in higher concentrations of animals and the consolidation of dairy parks. The environmental effects of medium to large scale livestock units made the inclusion of animal waste control and utilization in the larger units proposed by the project both practical and desirable. Each dairy park (and also each demonstration farm) has been subject to an environmental assessment by the local Environmental Protection Bureau. However, waste collection, storage, treatment and utilization facilities specified in the Assessment were often delayed or only partially implemented due to lack of funds from sub-loan beneficiaries and inadequate enforcement by the Bureaus. This was reportedly rectified in the final year of the project with the use of Italian Grant financed waste management facilities.

#### *Involuntary resettlement*

Though OP 4.12 was triggered at appraisal, there was no involuntary acquisition of land or productive assets during project implementation and no resettlement.

### b. Fiduciary Compliance:

The provision of financial reports was generally late, and until late in project implementation it remained unclear whether the Provincial Project Management Office or the Provincial Finance Bureau was responsible for financial management. Supervision missions repeatedly raised this issue and noted that financial management capacity was weak. Despite this, no irregularities were found in the financial management system. According to the ICR, the Bank's fiduciary (procurement and financial management) requirements have been generally followed during project implementation. There is no reference in the ICR to external project audits; nor did the project team provide information as to whether such audits were carried out, if they were qualified, or if the qualifications had been addressed.

### c. Unintended Impacts (positive or negative):

None

### d. Other:

12. Ratings:	ICR	IEG Review	Reason for Disagreement / Comments
<b>Outcome:</b>	Moderately Unsatisfactory	Moderately Unsatisfactory	
<b>Risk to Development</b>	Moderate	Significant	IEG views risk as Significant owing to

<b>Outcome:</b>			uncertainty regarding enforcement of compliance with waste management regulations.
<b>Bank Performance :</b>	Moderately Satisfactory	Moderately Unsatisfactory	There were several significant shortcomings in project design and quality at entry (see Section 8a above). Although Bank Supervision is rated Satisfactory, since Development Outcome is rated Moderately Unsatisfactory, per the IEG/OPCS Harmonized Criteria, Overall Bank Performance is rated Moderately Unsatisfactory.
<b>Borrower Performance :</b>	Moderately Unsatisfactory	Moderately Unsatisfactory	
<b>Quality of ICR :</b>		Satisfactory	

**NOTES:**

- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

**13. Lessons:**

The following lessons are drawn from the ICR though the third is mentioned in the Sections entitled "Key Factors Affecting Implementation and Outcomes" and "Institutional Change and Strengthening," rather than under "Lessons Learned:"

1. A project with a single commodity focus comes with risks and is susceptible to supply and demand shocks which can have a major impact on project implementation . This vulnerability needs to be recognized and explicitly addressed during preparation and appraisal .
2. All intensive livestock sectors must pay close attention to livestock waste management issues as these are elements for the success and sustainability of investments in the sector . Careful attention must be paid to the incentives and capacity of the entity charged with monitoring and enforcing compliance with sound operations and maintenance of waste management facilities .
3. An institutional model like "dairy parks," in which small-scale farmers participate in farmer associations in partnership with private investors and a government entity offers a way in which productivity and farmer incomes can be increased and in which environmental issues, such as waste management, can be more effectively addressed and in which small-scale farmers can potentially mitigate risks .

**14. Assessment Recommended?**     Yes     No

**15. Comments on Quality of ICR:**

Overall the ICR is thorough and candid, especially the M&E section (pp.10-11), which includes well-written subsections on design, implementation, and utilization . However, key numbers on productivity are inconsistent between the Results Framework Analysis of the ICR and the main text . The derivation of the baseline of 13 liters per day stated by the ICR (p. 13) to be in the PAD Annex 3 is not apparent (see detailed discussion in Section 4 above). The reporting on completion of waste management facilities in the Results Framework Analysis (p.viii) vs. the main text (P.11) is inconsistent. Meaning is occasionally marred by incomplete, long and/or run-on sentences. There is no discussion of external project audits .

**a. Quality of ICR Rating :** Satisfactory

