Report Number : ICRR0021487

1. Project Data

Project ID P122123	**Project Name** ZM:Livestock Develop & Animal Health Prj	
Country Zambia	**Practice Area(Lead)** Agriculture	
L/C/TF Number(s) IDA-50530	**Closing Date (Original)** 30-Jun-2018	**Total Project Cost (USD)** 46,942,985.57
Bank Approval Date 28-Feb-2012	**Closing Date (Actual)** 30-Jun-2018	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	50,000,000.00	0.00
Revised Commitment	50,000,000.00	0.00
Actual	46,942,985.57	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
Hassan Wally	Fernando Manibog	Christopher David Nelson	IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

The original Project Development Objective (PDO) stated in the Project Appraisal Document (PAD, p. 4) and the PDO in the Financing Agreement (FA, p. 5) were identical and aimed to:

"improve the productivity of key livestock production systems for targeted female and male smallholder producers in selected areas of the Recipient's territory."

In April 2017 the project was restructured and the original PDO was revised as follows:

"to contribute to the improvement of livestock health and production of selected smallholder systems in targeted areas of the Recipient's territory" (Restructuring Paper, para 6).

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

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

17-Apr-2017

c. Will a split evaluation be undertaken?

Yes

d. Components

The PDO was supported by three components:

1. Livestock Services Provision (appraisal estimate: US$25.45 million, actual cost: US$29.70 million). This component aimed to strengthen the zoonotic and contagious animal diseases surveillance and control systems, including laboratory diagnostic capacities; build institutional capacity within the Ministry of Agriculture and Livestock to improve service delivery; and improve the capacity to monitor food safety of facilities (slaughterhouses, milk collection centers) in the targeted project areas. It included three sub-components:

1.1. Strengthening the Surveillance, Diagnostic and Control of Animal Diseases. This sub-component would support the strengthening of passive and active surveillance systems for zoonotic and major contagious animal diseases and would scale-up vaccination of major diseases. It would provide support to pre-defined disease control strategies including vaccination campaigns, progressive zoning approach and public awareness campaigns, in collaboration with the private sector. The main focus would be on major identified diseases of economic importance including Foot and Mouth disease (FMD), Contagious Bovine Pleuropneumonia (CBPP), East Coast Fever (ECF), Newcastle Disease (ND) and African Swine Fever (ASF). The sub-component would also provide short-term training, logistical support and equipment to decentralized Veterinary offices (Provincial and District Veterinary Camps), as well as develop and support mechanisms for establishing private veterinarians in rural areas. Support for laboratory capacity improvement would be provided through: laboratory infrastructure improvement; equipment, material and consumables; training of laboratory staff; and development and implementation of a quality management system to access accreditation for specific tests.

1.2. Support for Livestock Infrastructure and Access to Services. This sub-component would support the Ministry of Agriculture and Livestock and Local Authorities to establish or rehabilitate essential livestock infrastructure (e.g., Livestock Service Centers, markets, slaughter facilities, etc.) in agreed locations subject to an Infrastructure Inventory and Needs Assessment. Management of such publicly-owned infrastructure would be covered under a contractual arrangement with the private sector as appropriate.

1.3. Institutional Support to the Ministry of Agriculture and Livestock. The sub-component would strengthen staff capacity in the Ministry to carry out its core responsibilities, including extension and advisory services, disease control, sector monitoring and evaluation, sector analysis, policy preparation and implementation. Specific support would also be provided to develop and implement key policy options, institutional reforms and review of the legislative framework to build an environment for sustainable growth of the livestock sector. Other support would be for priority food safety issues including the joint development and implementation of surveillance plans to monitor residues, brucellosis or salmonellosis. Finally, the sub-component would support the operationalization of the national “Emergency Animal Diseases Control Fund” (EADCF) established under the Animal Health Act.

2. Productive On-Farm Investments (appraisal estimate: US$18.45 million, actual cost: US$11.14 million). This component aimed to improve productivity of identified production systems through grant support to on-farm investments. In the smallholder sector, the priority would be to introduce technologies that reduce livestock mortality particularly in young stock, improve reproductive efficiency and enable animals to quickly reach optimum slaughter weight. This component would comprise three grant windows for: productive on-farm investments; transfer of technology in the area of pasture management/forage development; and strengthening the role of producer associations to provide services to farmers. It includes three sub-components:
2.1. Support for the Livestock Improvement Grant Facility. A Livestock Improvement Grant Facility (LIGF) would be created to allow eligible smallholder producers (groups or cooperatives) and other livestock industry stakeholders to establish productive livestock investment packages. These packages would include essential infrastructure (e.g., communal cattle handling facilities, milk collection centers, feedlots, grass fodder production methods, etc.), enhanced genetic merit livestock (e.g., grade dairy cattle, pigs, goats), access to improved services (e.g.veterinary, Artificial Insemination, Community Livestock/Animal Health Worker training), marketing and value addition activities.

2.2. Pasture Management and Forage Development. This sub-component would offer small grants to specialized institutions (i.e., NGOs, training and research institutions) with successful track records of introducing to small-scale farmers techniques and technologies that aim at increasing feed availability during the dry season.

2.3. Strengthening Capacities of Non-Public Service Providers. This sub-component would co-finance activities proposed by non-public service providers aimed specifically at increasing the representation of, and services to, small-scale producers and emergent farmers by reinforcing advisory, advocacy and information services to these beneficiaries. Eligible organizations would include but would not be limited to the Poultry Association of Zambia (PAZ), the Dairy Association of Zambia (DAZ), the Beef/Cattle Association and the Pigs Commodity Committee of the Zambian National Farmers Union (ZNFU).

3. Project Management (appraisal estimate: US$5.40 million, actual cost: US$4.18 million). This component would support the establishment, operation, equipment provision and training of project coordination offices at both national and provincial levels, as well as the operational costs of the national Project Steering Committee (PSC) and the project's Technical Committee. The component would also finance: implementation and administration of the Livestock Improvement Grant Facility; M&E activities including regular impact evaluation studies and audits; management and oversight of safeguards issues; and preparation and implementation of a communication strategy.

Revised Components. The design of the components remained the same, however, the scope of some activities was slightly revised.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. The total cost of the project was estimated at appraisal to be US$64.75 million. The actual cost reported by the ICR Annex was US$45.64 million. The difference is due to the reporting of IDA financing only in the ICR without including other financing sources.

Financing. The project was financed through a Specific Investment Loan (SIL) composed of an IDA Credit worth US$50.00 million equivalent. Actual disbursement reported by the ICR Annex 3 was US$45.64 million.

Borrower Contribution. The borrower was expected to contribute US$9.89 million equivalent, primarily in the form of foregone taxes. Beneficiary co-financing, comprising mainly of the private sector, service providers and producers, was expected to contribute US$4.86 million equivalent (PAD, p. 9, para 29). The ICR did not report on the actual amounts contributed by the borrower or the beneficiaries.

Dates. The project was approved on February 28, 2012 and it became effective five months later on July 31, 2012 - one month later than the expected date in the PAD. The Mid-Term Review (MTR) was carried out on June 8, 2015. The PAD did not provide a specific date for the MTR but stated that it "will be conducted no later than three years after the first disbursement (p. 68, para 65)." The project closed on June 30, 2018 as planned.
The project was restructured twice. The first was a Level 2 restructuring on December 17, 2015, when the amount disbursed was US$20.99 million, in order to introduce changes to the Results Framework and components. The second was Level 1 restructuring on April 11, 2017, when the amount disbursed was US$31.67 million, in order to change the PDO, revise the components and corresponding targets in the Results Framework; and reallocate funds among Disbursement Categories.

3. Relevance of Objectives

Rationale

Livestock in Zambia plays a key role in contributing to rural incomes, diversification of sources of earnings and risk management related to household-level financial risks. Livestock is also an important asset to counter drought and fluctuations in the exchange rate, consumer prices and employment in the mines. The livestock sector is relatively under exploited, but recognized as an increasingly dynamic part of the agricultural economy. Low productivity is the most important challenge faced by the livestock sector and is a result of underinvestment, poor animal husbandry, poor animal nutrition and severe losses due to animal diseases. Other factors responsible for low productivity include: inadequate infrastructure for livestock production, processing and marketing; weak extension and advisory services; and weak or absent producer organizations.

At project appraisal, the original objectives were in line with the Government's priorities for the livestock sector. The Government's Fifth National Development Plan (FNDP, 2006-10) aimed to promote rural investment and accelerate poverty reduction, among other things. The project was expected to directly contribute to increased rural incomes, accelerated and shared growth and rural poverty reduction. Objectives were in line with Zambia's Comprehensive Africa Agriculture Development Program (CAADP) Pillars I (Land and Water Management) and III (Food security and Hunger). Objectives were also in line with the World Bank's new Africa Strategy (March 2011) Pillars I (Competitiveness and Employment) and II (Vulnerability and Resilience). Objectives were also in line with the Bank's Country Assistance Strategy for Zambia (CAS, 2008-2011) which aimed to support governance, transparency, business environment and agriculture development; as well as to increase employment opportunities, and reduce income risks in rural areas. Since the livestock sector contributes approximately 39% to rural incomes, the project was expected to contribute to the key CAS objectives of accelerated and shared growth and hence lead to a reduction of rural poverty.

At project completion, both the original and revised objectives were in line with the Government's priorities for the livestock sector. They were also in line with the first objective of the Bank's Country Partnership Framework (CPF FY18-21-under preparation) which aimed to create a conducive enabling environment for sustainable, competitive and diversified agro-food production, with deepened access to local, domestic and export markets. The CPF emphasized that the twin challenges facing Zambia are to unlock its full range of agricultural potential and elevate the incomes of the rural poor. The livestock sector contributes over 30% of the agriculture GDP and offers huge opportunities for income growth and diversification.

The original statement of objectives was broad and lacked a connection with higher level objectives that the project sought to achieve (i.e., increasing rural incomes and reducing rural poverty). The statement of the revised objectives was also broad as the project was expected to "contribute to the improvement of livestock health and production". It also lacked a connection to higher level objectives as previously mentioned for the original PDO statement. Finally, the PDO statement could have referred to marketing and value chain development since both are critical elements of improving productivity.

On this basis, the relevance of objectives is rated substantial for both the original and revised objectives.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1
Objective

PDO: to improve the productivity of key livestock production systems for targeted female and male smallholder producers in selected areas of the Recipient's territory.

Rationale

Theory of Change. To raise the productivity of smallholder livestock production systems, the project would provide support through two main and parallel approaches. First, support would be provided at the level of quality and efficiency of public and private livestock services, and secondly, support would directly target farm level activities by improving smallholders' and small-scale processors' access to knowledge, technologies, improved inputs, breeds and housing. The project was to target selected species including cattle, small ruminants (sheep and goats), pigs and poultry for smallholder producers in Eastern, Southern and Western provinces and the Disease-Free Zone comprising Central, Lusaka and parts of Copperbelt provinces. While improving the quality and efficiency of services, as well as access to knowledge, would lead causally and directly to increased productivity, the project could have benefitted from activities geared to strengthen livestock value chains and livestock marketing.

Outputs

Livestock Services Provision

- 573,000 cattle were vaccinated against FMD (out of a target of 600,000) in 8 campaigns (out of a target of 11). The percentage achieved was 96%.
- A cumulative total of 9,999,424 village chickens were vaccinated against Newcastle disease out of a target of 13,763,310. However, the ICR (footnote#10, p. 44) explained that although quarterly vaccinations were required to maintain immunity, but the project only conducted bi-annual vaccinations. Also, accurate data was not possible for short cycle species such as village chickens.
- 9 livestock infrastructure units were constructed compared to an original target of 185 and a revised target of 11. The ICR (p. 41) reported that the infrastructure was completed, but not officially handed over by the contractors to the Ministry.
- Two food safety surveillance and monitoring plans were developed (against a target of 3). However, according to the ICR (p. 38) these plans were still in draft form and not implemented.

- One action plan for genetic resources was developed, but was not implemented.

Productive On-Farm Investments

- 587 grants were awarded out of 1,125 applications received. The disbursement rate was 73% for LIGF; 12% for Pasture and Forage Grant Facility; and 13% for Non-Public Service Providers Grant Facility.
- The average sub-project outputs in terms of production compared to standard results in similar production systems were:
  - 10 porkers/baconers per female per year against a target of 16 to 18,
  - 278,000 broilers were produced per year against a target of 335,000,
  - 109 eggs were produced per layer per year against a target of 183.
  - However, the number of young goats, number of chicks and number of yearlings/steers per female per year could not be determined because the project's value was outside the confidence level. Also, the amount of milk produced per cow per day (liters/day) could not be determined because the project's value was outside the confidence level.

Outcome

The expected outcome under the original objective was improved productivity of key smallholder production systems (cattle, small ruminants such as sheep and goats), pigs and poultry in selected areas covered by the project. This was assessed through two main PDO Indicators (disease incidence in the project areas and increase in livestock production in project areas). Direct project beneficiaries reached 322,990 compared to a revised target of 390,000 (83% achievement rate).

As a result of project's support to livestock service provision, the prevalence of Newcastle disease in poultry was expected to drop from a baseline of 60% to and an end of project target of 40%, Foot and Mouth disease from a baseline of 10% to an end of project target of 7%; and Contagious Bovine Pleuropneumonia from a baseline of 15% to and an end of project target of 10%. The ICR did not provide clear information on the achievement of this indicator, but it stated (Annex 1) that the indicator was considered not achieved. The project failed to respond to the a new strain of Foot and Mouth Disease that broke out in 2015 despite the availability of control measures under the project. By project completion 6 districts were cleared from Contagious Bovine Pleuropneumonia compared to an original target of 13 and a revised target of 6. The ICR (Annex 1) noted that the revision was carried out at the ICR mission stage.

As a result of the project support to productive on-farm investments, livestock productivity was expected to increase in project areas. The ICR (p. 16, para 46) stated that the "original proxy indicators (mortalities) for productivity in chicken and goats were never monitored, then dropped during the first restructuring and replaced by the increase in number of village chickens and goats which, later, were monitored only once before the second restructuring. Proxy indicators for pigs and dairy were also monitored only once during project implementation." The average number of village chickens per smallholder reached 30 compared to an end target of 14 and a baseline of 11; the average number of goats per smallholder household reached 16 compared to a target of 8 and a baseline of 6; and the average number of reared pigs per smallholder household reached 11 compared to a target of 11 and a baseline of 5. However, milk produced per smallholder household reached 2.1 liters per day compared to a baseline of 6 and a target of 8 liters per day. The ICR (Annex 1) candidly criticized the accuracy of the reported figures. It stated that "number of animals owned by smallholder household cannot specifically be attributed to project activities". Also, the end of project data were from the draft Beneficiary Assessment in project areas, however, baseline and target values were based on the “Rural Agricultural Livelihoods Survey" (RALS) 2012 and 2015 data which provided provincial values. The end of project values of the indicators were already or mostly achieved when target values were determined. Finally, the matching grant facility under component 2 achieved only 49% of the potential sub-projects financed in the six years of the project, while the operationalization rate (successful implementation of sub-projects) was estimated at about 55%.

Based on the information mentioned above, outcome is rated modest due to the absence of reliable data to assess the project's impact on productivity. The figures provided for productivity increments suffered from methodological issues and according to the ICR (p. 17, para 47) "cannot reliably measure project’s achievement" due to comparability issues, attributability of the indicators; and choice of target values." The project also failed to respond to a disease outbreak despite control measures. There were also attribution issues where according to the ICR (Annex 1) "the determining factors of the number of animals per smallholder household are broader than the ones on which the project intervened."

Rating
Modest

Objective 1 Revision 1

Revised Objective

PDO: to contribute to the improvement of livestock health of selected smallholder systems in targeted areas of the Recipient’s territory.

Revised Rationale

T
heory of Change. The project was expected to strengthen the Ministry of Fisheries and Livestock's key functions, specifically in the areas of animal diseases surveillance and control and expansion of vaccination coverage for four major diseases; improvements in veterinary infrastructure; and enhancement of competencies of the Veterinary Services. These activities were expected to contribute to improving animal health, significantly reduced animal mortality and morbidity and consequently increased production and productivity in livestock products. However, achieving these results hinged on the ability of the Ministry of Fisheries and Livestock's to sustainably support the project and provide adequate capacity and committed

staff at all levels to deal with implementation bottlenecks and timely decide on strategic course correction actions. This proved challenging during implementation and resulted in implementation shortcomiongs.

Outputs

Livestock Services Provision

Same outputs as under the original Objective 1:

- 573,000 cattle were vaccinated against FMD (out of a target of 600,000) in 8 campaigns (out of a target of 11). The percentage achieved was 96%.
- A cumulative total of 9,999,424 village chickens were vaccinated against Newcastle disease out of a target of 13,763,310. However, the ICR (footnote#10, p. 44) explained that although quarterly vaccinations were required to maintain immunity, but the project only conducted bi-annual vaccinations. Also, accurate data was not possible for short cycle species such as village chickens.
- 9 Livestock infrastructure units were constructed compared to an original target of 185 and a revised target of 11. The ICR (p. 41) reported that the infrastructure was completed, but not officially handed over by the contractors to the Ministry.
- Two food safety surveillance and monitoring plans were developed (against a target of 3). However, according to the ICR (p. 38) these plans were still in draft form and not implemented.
- One action plan for genetic resources was developed, but was not implemented.

Incremental outputs under the revised Objective 1:

- 363,000 animals were immunized against East Coast Fever (ECF) although this disease was not formally monitored by the project. Immunization which was done on young calves between 3 and 18 months, which offers protection to the animal for life.
- The Emergency Animal Disease Control Fund--which the project funded, contributed to controlling the outbreak in the African Swine Fever (ASF) in the Lusaka area in 2013.

Outcome

The project's support to vaccination programs could possibly have contributed to lower animal mortality, particularly these resulting from Foot and Mouth Disease (FMD) and Contagious Bovine Pleuropneumonia (CBPP). Between 2012 and 2015, cattle mortality rate declined, and the herd population reached 2.8 million from a baseline of 2.1 million in 2012. That said, the ICR (p. 13, para 32) acknowledged that "reduction in mortality as a proxy indicator for productivity improvement was not considered as an accurate measure of progress." A reduction in mortality could result from better management practices in general, for example.

On the other hand, the project failed to establish a sustainable veterinary system for animal diseases surveillance and control. This was critical to improve animal health in Zambia (ICR p. 19, para 59) and contribute to sustainable gains in animal productivity. This is a significant shortcoming that warrants a modest rating to this outcome.

Revised Rating
Modest

Objective 1 Revision 2

Revised Objective

PDO: to contribute to the improvement of livestock production of selected smallholder systems in targeted areas of the Recipient's territory.

Revised Rationale

Theory of Change. Same as original objective. While improving the quality and efficiency of services, as well as access to knowledge, would lead causally and directly to increased productivity, the project could have benefitted from activities geared to strengthen livestock value chains and livestock marketing.

Outputs

Outputs mentioned under the original objective pertain to this one as well.

Outcome

Outcome is rated negligible for the same reasons mentioned under the original objective. In addition, the failure of the project to complete and operationalize the Livestock Service Centers combined with the delayed implementation of sub-projects severely undermined the achievement of results and outcomes of the project. Specifically, farmer access to improved technologies and better animal breeds was hindered. This negatively impacted the achievement of the production and productivity outcomes. Finally, the ICR (p. 19, para 59) stated that: "the paucity of results data on one major PDO indicator combined with the frequent revisions of some indicators meant that tracking of some results was inconsistent." Evidence on achievement of results was generally weak or absent.

Revised Rating
Negligible

Rationale

The original objective was rated modest because of methodological data issues that made accurate assessment of outcomes difficult. The project also failed to respond to a disease outbreak despite the presence of control measures in place.

The revised objective included two objectives:

The achievement of PDO 1 ("to contribute to the improvement of livestock health of selected smallholder systems in targeted areas of the Recipient's territory") was rated modest because the project failed to establish a sustainable veterinary system for animal diseases surveillance and control. This was critical to improve animal health in Zambia (ICR p. 19, para 59) and contribute to sustainable gains in animal productivity.

The achievement of PDO2 ("to contribute to the improvement of livestock production of selected smallholder systems in targeted areas of the Recipient's territory") was rated negligible for the same reasons mentioned for the original objective. In addition, the failure of the project to complete and operationalize the Livestock Service Centers combined with the delayed implementation of sub-projects severely undermined the achievement of results and outcomes of the project.

Efficacy before and after restructuring is rated modest.

Overall Efficacy is therefore rated modest.

Overall Efficacy Rating	**Primary reason**
Modest	Low achievement

5. Efficiency

Economic and Financial Efficiency

ex ante

- The economic and financial analysis (EFA) at appraisal did not provide an estimated rate of return for the project as a whole. The EFA estimated the Economic Internal Rate of Return (EIRR) on productive investments under the proposed matching grant scheme to range between 15% and 31%, with interventions that support livestock marketing expected to provide the greatest returns.
- The estimated aggregate Internal Rate of Return (IRR) for productive investments was about 27% percent (excluding milk collection centers due to higher initial cost). This was higher than the opportunity cost of capital (estimated at 12%), making most of these investments economically viable.
- Preliminary analysis of the impact of disease control in Zambia implies that improved health services translate into: (i) lower mortalities (between 1 and 5%) and calving rates at 60% compared to 50% over a 3

year period; and (ii) increased live weight of animals of 36 tons and increased milk production of 26,000 liters over 20 years, combined with a reversal of the downward trend in livestock numbers.

ex post

- An ex-post EFA was prepared that accounted for the benefits arising from animal disease control and productive on-farm investments. Overall, the project results are an EIRR of 11% and a Net Present Value (NPV) of the additional benefits of US$0.9 million, at 6% discount rate and over seven years
- The EIRR on activities under the first component was 14% and the net present value (NPV) of the additional benefits was US$1.5 million (at 6% discount rate and over seven years). However, the first component suffered from cost overruns, which lowered the overall profitability indicators. Specifically, the outputs envisioned at the design stage were accomplished with about twice the inputs (ICR, p. 20, para 63).
- For the productive on-farm investments, the sub-projects had EIRRs ranging between 20% and 40%. The NPV of the additional benefits (at 8% and over 10 years) ranged from US$ 1,732 per hectare of forage production to US$7,734 for layer chicken units. All sub-projects have cost-benefit ratios higher than one.
- However, the slow implementation of matching grants resulted in overall negative economic results. The animal disease control activities were negatively impacted by the underperformance of the second component (ICR, p. 20. para 65).
- A revised EFA was not carried out because the proposed changes would result in the project's results falling within the range of the original break-even sensitivity analysis (ICR, p. 19, para 62). IEG disagrees with this assessment because post restructuring the project had two distinct PDOs therefore a revised EFA was warranted to provide a comprehensive assessment of the project's investments post restructuring.
- Finally, the accuracy of the ex post EFA is questionable given the poor M&E data.

Administrative and Institutional efficiency

The project closed on time. However, it suffered from implementation delays, particularly for the matching grants, which negatively impacted the achievement of outcomes. Disbursement of grants took two years from the closing of applications to the disbursement of the first tranche, followed by another 3 to 6 months for the disbursement of the second tranche (ICR, p. 21, para 73). There were procurement delays due to a slow approval process that required approval from multiple layers of government. In addition, the roles of the approval committees (Ministry Procurement Committee and Evaluation/Contracts Award Committee) were unclear. The situation was exacerbated by capacity weaknesses, poor coordination and inadequate knowledge of World Bank procurement procedures (ICR, p. 24, para 83). Procurement delays negatively impacted the quality of M&E where critical studies such as the mid-term and end project Beneficiary Assessments were not delivered on time.

Based on the above mentioned information efficiency is rated negligible due to significantly higher expenditure on activities under component 1, weak administrative efficiency, and low overall economic internal rate of return (ex post EIRR at 11% at 6% discount rate versus ex ante at 27% at 12% discount rate).

Efficiency Rating

Negligible

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

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 ☐Not Applicable
ICR Estimate	✓	11.00	100.00 ☐Not Applicable

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

6. Outcome

Before Restructuring. Relevance of objectives was rated substantial. Efficacy was rated modest due to the absence of reliable data to assess the project's impact on productivity. The project also failed to respond to a disease outbreak despite control measures; failed to establish a sustainable veterinary system; and fell short on a number of targets, most notable being the matching grants. Efficiency was rated negligible due to weak administrative efficiency, and low overall economic internal rate of return.

Based on the combination of Substantial relevance, Negligible efficacy and Negligible efficiency, outcome is rated Unsatisfactory.

After Restructuring. Relevance of objectives was rated substantial. Overall efficacy rating was modest. While the project showed some success in improving animal health through vaccinations, it failed to establish a sustainable veterinary system for animal diseases surveillance and control--a critical requirement to sustainably improve animal health in Zambia. Also, the failure to complete and operationalize the Livestock Service Centers combined with the delayed implementation of sub-projects severely undermined the achievement of results and outcomes of the project pertaining to improvement of livestock production. In addition, the data on livestock improvement was unreliable. Efficiency was rated negligible due to weak administrative efficiency, and low overall economic internal rate of return.

Based on the combination of Substantial relevance, Modest efficacy and Negligible efficiency, outcome is rated Unsatisfactory.

Weighted outcome. On balance the overall outcome is determined by the average of ratings before and after restructuring (indicated by scores from 1 to 6), weighted by the disbursements before and after the restructuring. This calculation is as follows: [(31.67*2)+(15.27*2)]/46.94 = 2. This result is equivalent to a rating of Unsatisfactory.

a. Outcome Rating

Unsatisfactory

7. Risk to Development Outcome

Risk to the Development outcome is affected by two main risks discussed by the ICR (pages 26& 27, paras 94 and 95):

First, there is a concern that the animal disease control activities for the four diseases (CBPP, FMD, ECF and ND) covered under the project will not be sustained due to budget constraints. The failure to sustain these activities could result in rolling back any gains achieved and possibly a costly relapse in the diseases. To minimize this risk, funds need to be secured from internal and external sources to sustain the project supported activities and minimize the risk of disease resurgence. A longer term solution should include support from the government's budget combined with a cost recovery mechanism.

Second, there could be inadequate institutional capacity to support the investment packages under the matching grant facility. The sustainability of sub-projects post completion is at risk due to weak capacity of the recipients, coupled with the limited support from public services, and the low rate of operationalization at project closing. Also, there is a high risk that the advisory services to matching grants recipients will not be sustained because of operational budget constraints is high.

A third risk is added by IEG:

Third, there could be impacts of climate change on the availability of animal feed. If the country experiences a shift in rain patterns or extended periods of drought as a result of climate change; this could negatively impact animal productivity. Extended periods of drought could hinder the regeneration of natural grazing areas and/or hinder smallholders ability to cultivate animal feed necessary to support their herds.

Based on the afore mentioned risks, the Risk to Development Outcome is rated High.

8. Assessment of Bank Performance

a. Quality-at-Entry

- Project preparation took slightly over one year (October 2010 - December 2011). Preparation benefitted from six consecutive missions to the country and support from the Investment Center of FAO.
- Design was complex with two main components and many sub-components. It benefitted from the evaluation of the Performance of the Veterinary Services that was recommended by the World Organization for Animal Health (OIE) and subsequent Gap analysis, which was conducted prior to project preparation where national priorities were identified. A number of lessons from previous operations in the agricultural sector were reflected in the design, most notable were: ensuring the sustainability of investments, ensuring linkages and building on in-country livestock initiatives, and establishing a solid M&E system.
- However, design suffered from a number of weaknesses including: inadequate focus on productivity enhancing investments such as improved genetics and animal nutrition; weaknesses of the matching grant scheme design; and herd health at the farmer level including herd registration and herd management plans. Also, design restricted the application of matching grants to farmer groups or registered cooperatives only, while the demand at individual farmer level was left unmet. There were problematic implementation arrangements as the government systems suffered from weak capacity, and systemic issues (ICR, p. 15, para 37). Design also could have benefitted from ensuring strong support to producer organizations, strengthening the producers' access to markets and promoting improved animal feeding practices, and thoroughly assessing data availability. Finally, design overestimated the Borrower's capacity to successfully implement the project, which was a key assumption for the project success at the design stage.
- Seven risks were identified at the preparation stage including fiduciary risks, elite capture, inadequate infrastructure development, lack of experience in administering matching grants, poor coordination between central and district levels, among others. While mitigation measures were relevant, implementation challenges hindered the project from following through on agreed mitigation actions (ICR, p. 25, para 87). Also, the government failed to follow through on mitigation actions to address weakness in financial management despite being flagged as a high risk. A notable risk that was not identified at the preparation stage was the reliance on government staff for project implementation and its implications. The implementation of activities that deviated from the core functions of the Ministry of Fisheries and Livestock, such as matching grants, was challenging because it required specific skills and capacity not available at the ministry (ICR, p. 26, para 88).
- M&E suffered from design and implementation weaknesses that impacted the final assessment of the project's outcomes (see section 9 for more details).
- Base on the aforementioned information, Quality at Entry is rated Moderately Unsatisfactory due to design shortcomings, inadequate consideration of the risks associated with project implementation using country systems, and M&E weaknesses.

Quality-at-Entry Rating
Moderately Unsatisfactory

b. Quality of supervision

The Bank carried out 11 supervision missions (including the MTR) during the project implementation period. According to the ICR (p. 26, para 90) the missions benefitted from a mix of skills including technical, fiduciary, safeguards and financial and procurement specialists. Also, external consultants from the Investment Center of the FAO were used as needed. The Bank and project team were flexible to restructure or revise indicators when it was necessary to facilitate implementation. However, solving implementation bottlenecks was not always successful since the project team did not proactively "implement relevant recommendations made during supervision missions (ICR, p. 26 para 91)." In a further communication, the project team noted that there was one country based TTL throughout implementation.

The project's M&E could have benefitted from more support from the supervision team to ensure timely data collection and adequate revision of indicators. However, only five supervision missions that included M&E experts were conducted during the project’s life. The project suffered from the lack of M&E data, weaknesses in the matching grant facility and overoptimistic expectations of borrower capacity. Other than the two restructurings, which did not remedy the implementation weaknesses, it was not clear in the ICR what was done by supervision team and the Bank to address the project’s shortcomings.

Based on the above mentioned information, quality of supervision is rated Moderately Unsatisfactory.

With Quality at Entry and Quality of Supervision both rated Moderately Unsatisfactory, the overall rating of Bank Performance is Moderately Unsatisfactory.

Quality of Supervision Rating
Moderately Unsatisfactory

Overall Bank Performance Rating
Moderately Unsatisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

- The PAD did not include an explicit theory of change. Nonetheless, the ICR (Annex 7) included one that show the pathways among between inputs, outputs, and the expected outcomes.
- The Project Coordination Office (PCO) would be responsible for overall M&E and complying with agreed reporting requirements. The PCO would establish, host and maintain within the Ministry of Agriculture and

Livestock (later changed to Ministry of Fisheries and Livestock), a project- specific Management Information System (MIS) and M&E framework.

- The original PDO was to be assessed through three outcome indicators (reduction in the prevalence rate of ND, CBPP and FMD in the project areas, increase in livestock productivity in project areas, and direct project beneficiaries). The first two are clearly outcome indicators, however, the third only provides a count of beneficiaries. The first outcome indicator while directly linked to the PDO was difficult to interpret because measuring disease prevalence was done by serology (ICR, p. 13, para 32). For example, for CBPP the varying prevalence values at District levels were likely to indicate the continued present of the infection, but provided little guidance to causal relationships. In the case of FMD, it was not possible to differentiate between vaccinated animals and those exposed to natural infections, and a better indicator would be the number of outbreaks, and the response to such outbreaks (ICR, p. 13, para 32) . Finally, measuring ND was difficult and "lacked scientific basis" according to the ICR (p. 12, par 23). The second outcome indicator was linked to the PDO, however, using reduction in "mortality as a proxy indicator for productivity improvement was not an accurate measure of progress (ICR, p. 13, para 32). The PAD did not provide enough details on the third outcome indicator on direct beneficiaries and whether these were intended at design to be individuals or households (ICR, p. 23, para 76).
- The Results Framework included twelve intermediate outcome indicators. Most of these lacked baselines. During restructurings (see below for more detail) some were revised to better align with activities while others were dropped because the cost would outweigh the benefit of collecting them (ICR, p. 23. para 77).
- Overall, the M&E design was weak given the shortcomings (mentioned above) that were associated with the three outcome indicators used. Also, intermediate outcome indicators required a number of revisions during implementation. Design could have benefitted from a clear understanding on livestock productivity, including how best to measure it, and what indicators to use.

b. M&E Implementation

- Data collection was weak due to the absence of close supervision, inadequate operational funds, and inherent complexities with tracking data in the livestock sector (ICR, p. 23, para 78 and footnote#8). There were also systemic challenges associated with collecting livestock data and inherent limitations associated with using country systems.
- Data on PDO indicators was only collected at mid-term and at end of the project; either through a regular government funded household survey or a project beneficiary assessment survey. However, there were data issues regarding timing, representativeness, capture and the robustness of baselines and targets.
- The M&E system also lacked a comprehensive up-to-date database serving as a one-stop-shop to help monitor performance. M&E reports were submitted late from the provinces due to delayed submissions from the district staff.

- While the project had a dedicated M&E specialist, there was no follow-up on M&E during the last six months of the project because the specialist moved to another employment. Finally, the Rural Agricultural Livelihood survey due by the end of the project was postponed.

Restructuring and RF revisions.

- The PDO, the two main outcome indicators and some sub-indicators were revised during the two project restructurings. Revision of the PDO was necessary because the achievement of the original PDO was unlikely due to implementation delays; limitations on the quality and availability of data on the main PDO outcome of productivity; and absence of data to analyze productivity by gender of the smallholder household head (ICR, p.13, para 32).
- While restructuring marginally improved clarity and measurability of PDO indicators, it did not improve data capture, nor the robustness of baselines and targets. For example, the indicator on matching grants utilization was constrained by the absence of steady supervision and reliable data collection; and baselines and targets for CBPP included districts that were not covered by the project intervention.
- Overall, the two project restructurings and the accompanying revisions to the PDO and RF indicators did not remedy the weaknesses in the M&E system. The project results were undermined by vague indicator definitions combined with methodological shortcomings.
- Finally, the ICR (p. 24, para 79) concluded that the project did not provide "evidence of a functioning M&E system generating reliable data periodically."

c. M&E Utilization

Annual reports were generated by the project, but were not used actively in shaping management decisions. The livestock sector management information system was not harmonized as envisioned. Reporting on the project's activities and results were not done to actively monitor performance, but rather to satisfy reporting needs on implementation support missions or for annual reports (ICR, p. 24, para 80).
According to the ICR (p. 24, para 81) the "project M&E system did not actively demonstrate potential for being a monitoring tool where data was being actively used for decision."

Overall, design suffered from weaknesses, implementation was poor, and utilization was limited. Therefore, M&E quality is rated Negligible.

M&E Quality Rating

Negligible

10. Other Issues

a. Safeguards

- The project was categorized as a category B. It triggered five safeguard policies: Environmental Assessment OP/BP 4.01, Natural Habitats OP/BP 4.04, Pest Management OP 4.09, Physical Cultural Resources OP/BP 4.11, and Involuntary Resettlement OP/BP 4.12 (PAD, p. vii). The ICR (p. 24, para 82) mentioned only three safeguard policies (Environmental Assessment OP 4.01, Physical Cultural Resources OP 4.11 and Involuntary Resettlement OP4.12).
- The project sought to improve the productivity of key livestock production systems for targeted smallholder producers in identified areas. The project activities might have negative impact on the biophysical environment. Also, there was a risk of potential wildlife/livestock conflicts in some parts of the project area; and there are cultural resources or sites having archaeological (prehistoric), paleontological, historical, religious and unique natural values.
- The Ministry of Agriculture and Livestock prepared an Environmental and Social Management Framework (ESMF), which provides a unified approach for the identification, assessment, and mitigation of potential negative impacts. The ESMF was reviewed and cleared by the Bank as well as by the Zambia Environmental Management Agency (ZEMA). The Ministry also prepared a Pest Management Plan (PMP) and a Resettlement Policy Framework (RPF).
- According to the ICR (p. 24 para 82) a qualified safeguards expert was hired by the project to manage environmental and social activities and provide safeguard training for grant recipients to ensure compliance with Bank safeguards policies. The Bank and the Zambia Environmental Management Agency (ZEMA) reviewed and approved Environmental Project Briefs (EPBs) and Environmental and Social Management Plans (ESMPs) prepared for all sub-projects likely to pose negative environmental and social impacts. Also, sub-project areas were screened for possible physical impacts and the application of alternative designs for flagged sub-projects resulted in no physical impacts being recorded on the project. Livestock infrastructure construction was mostly undertaken on existing Government agricultural institutions and for communal projects, land was allocated by local chiefs.
- The ICR (p. 24, para 82) stated that the project was in full compliance with OP/BP 4.12. However, no information was provided on the compliance with other safeguard policies.
- In a further communication, the project team stated that the project was in full compliance with the Bank's safeguards policies.

b. Fiduciary Compliance

Financial Management. Financial management was handled by a qualified and experienced accountant for the duration of the project. Arrangements were adequate throughout the life of the project and were compliant with the Bank’s policies and procedures (ICR, p. 25, para 84). Interim financial reports were prepared and submitted to the Bank on time except in the final year of the project when the reports were submitted late. Audit reports were prepared and submitted on time and were unqualified with no major financial management issues. However, the project at times experienced liquidity problems due to a delay in the flow of funds from the Ministry of Finance to the project's account. The ICR (p. 25, para 84) reported that this issue was resolved during implementation.

Procurement. Procurement was challenging over the life of the project. It suffered from capacity weaknesses, high turnover of procurement staff, slow approval process for contracts, and inadequate knowledge of the Bank's procurement procedures. Procurement planning was also poor due to limited coordination between the procurement staff and the user department. This situation resulted in significant delays in the procurement of some goods such as vaccines. One contract for the purchase of motorcycles was cancelled because it was improperly awarded, however, another contract was approved which resulted in double the number of motorcycles purchased. Also, "a few works contracts were recommended for cancellation for failure to perform" (ICR, p. 25, para 83). Procurement delays affected timely delivery of critical studies such as the mid-term and end of project Beneficiary Assessment.

c. Unintended impacts (Positive or Negative)

---

d. Other

---

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Unsatisfactory	Unsatisfactory	Efficacy was rated modest before restructuring and modest after restructuring. Efficiency was negligible. Weighted outcome rating was Unsatisfactory.
Bank Performance	Moderately Satisfactory	Moderately Unsatisfactory	QAE shortcomings and supervision weaknesses.
Quality of M&E	Negligible	Negligible	---
Quality of ICR		Substantial	---

12. Lessons

The ICR included five lessons. The following three are emphasized with some adaptation of language:

- **A multipronged approach and a balanced attention are needed to establish the basis for longer term and higher impacts on livestock production and productivity**. Failure to address one aspect has the potential to seriously undermine parallel efforts. Animal health, feed, genetics, and herd management, need to be embraced simultaneously to achieve optimal results. Projects supporting livestock development should address the weakest elements and follow a balanced attention to the main drivers/constraints for livestock production and productivity. The project was strong in animal health, but weak in complementary investments to raise productivity.
- **Institutional strengthening takes time and a project should not rely too heavily on expected reforms to achieve certain results.** Development and adoption of new policies and strategies, legal reforms or significant changes in a system, may be required to improve performance and compliance with standards and best practices over time. However, a typical project timeframe may not allow them to materialize fully, if at all, considering the many constraints outside the project’s control. Therefore, while efforts should be pursued to maintain and accelerate reforms where needed, projects should avoid including activities dependent upon such reforms.
- **To capture the project's achievements, the M&E system needs to include clear baselines and measurable indicators that are aligned with activities**. It is important to ensure clarity upfront on indicator definitions and scope to avoid ambiguities and minimize mid-term revisions to indicators unless the scope of the project has changed. Baselines and targets need to be carefully thought through with a suggested footnote in each instance on source and justification for choices made. A separate practical and handy M&E indicator definition handbook including methodologies to capture indicators should be developed consultatively with the client as early as possible before or at the onset of implementation. It is also crucial to manage the potential conflict between well intentioned design and actual capacity for implementation (on the ground) to get M&E right.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

While the ICR is well written, thorough reporting was hindered by poor M&E, which was beyond the control of the ICR. Coverage of project activities was selective with some areas receiving minimal coverage such as provision of infrastructure for production, processing and marketing, improving extension systems, and improved policies. This was possibly due to poor data and/or limited reporting. That said, the ICR was candid about project shortcomings and clearly stated the critical assumptions-such as reliance on country systems for implementation, and their impact on implementation and achievement of outcomes. Discussion of outcomes was undermined by the lack of evidence on the achievements of the project. Also, the causal links in the theory of change lacked an analytical discussion. The ICR included a number of important lessons that would be useful for designing future livestock projects within the country and regionally.

a. Quality of ICR Rating
Substantial