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Report No: 65184-ZM

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 32.60 MILLION
(US$50.0 MILLION EQUIVALENT)

TO THE

REPUBLIC OF ZAMBIA

FOR THE

LIVESTOCK DEVELOPMENT AND ANIMAL HEALTH PROJECT

February 1, 2012

Agriculture and Rural Development Unit
Sustainable Development Department
Country Department AFCS3
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2011)

Currency Unit	=	Zambian Kwacha (K)
5,000 K	=	US$1
US$1.534	=	SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADSP	Agricultural Development Support Project
AfDB	African Development Bank
ASF	African Swine Fever
ASIP	Agricultural Sector Investment Program
ARAP	Abbreviated Resettlement Action Plan
AWPB	Annual Work Plan & Budget
BOZ	Bank of Zambia
CAADP	Comprehensive Africa Agriculture Development Program
CAS	Country Assistance Strategy
CAHW	Community Animal Health Workers
CBPP	Contagious Bovine Pleuropneumonia
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistical Office
CVRI	Central Veterinary Research Institute
DAZ	Dairy Association of Zambia
EA	Environment Assessment
EADCF	Emergency Animal Diseases Control Fund
ECF	East Coast Fever
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
FMD	Foot and Mouth Disease
FMS	Financial Management System
FNDP	Fifth National Development Plan
GC	Grants Committee
GDP	Gross Domestic Product
GIS	Geographic Information System
GRZ	Government of the Republic of Zambia
HA	Hectares
HH	Household
HIPC	Highly Indebted Poor Countries
HIV/AIDS	Human Immuno-deficiency Virus/Acquired Immune Deficiency Syndrome
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
ICR	Implementation Completion and Results Report
IDA	International Development Association
IDSP	Irrigation Development and Support Project
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFR	Interim Financial Report
IMF	International Monetary Fund
IFMIS	Integrated Financial Management Information System
IRR	Internal Rate of Return
LDAHP	Livestock Development and Animal Health Project
LIGF	Livestock Improvement Grant Facility
LIMS	Livestock Information Management System

LSC	Livestock Service Center
MCC	Milk Collection Center
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MDRI	Multilateral Debt Relief Initiative
MIS	Management Information System
MoAL	Ministry of Agriculture and Livestock
MoFNP	Ministry of Finance and National Planning
MoH	Ministry of Health
NALEIC	National Livestock Epidemiology and Information Center
NCB	National Competitive Bidding
ND	Newcastle Disease
NGO	Non-Governmental Organization
NPC	National Project Coordinator
NRDC	Natural Resources Development College
OED	Operations Evaluation Department (World Bank)
OIE	World Organization for Animal Health
OP/BP	Operational Policy/Bank Procedure
ORAF	Operational Risk Assessment Framework
OVC	Orphans and Vulnerable Children
PA	Per Annum
PAZ	Poultry Association of Zambia
PCO	Project Coordination Office
PDO	Project Development Objective
PIM	Project Implementation Manual
PMP	Pest Management Plan
PPCO	Provincial Project Coordination Office
PPF	Project Preparation Facility
PPR	*Peste des Petits Ruminants*
PSC	Project Steering Committee
PVO	Provincial Veterinary Officer
PVS	Performance of Veterinary Services (evaluation)
RAP	Resettlement Action Plan
R&D	Research and Development
RIF	Rural Investment Fund
RPF	Resettlement Policy Framework
SADC	Southern African Development Community
SDR	Special Drawing Rights
SIDA	Swedish International Development Agency
SIL	Specific Investment Loan
SLIP	Smallholder Livestock Investment Project
SNDP	Sixth National Development Plan
TFSCB	Trust Fund for Statistical Capacity Building
ZABS	Zambia Bureau of Standards
ZAMSIF	Zambia Social Investment Fund
ZIAH	Zambia Institute of Animal Health
ZNFU	Zambian National Farmers Union

Regional Vice President:	Obiageli Katryn Ezekwesili
Country Director:	Kundhavi Kadiresan
Sector Director:	Jamal Saghir
Sector Manager:	Karen Mcconnell Brooks
Task Team Leader:	Alex Mwanakasale

REPUBLIC OF ZAMBIA
LIVESTOCK DEVELOPMENT AND ANIMAL HEALTH PROJECT

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PAD DATA SHEET

Zambia

Zambia: Livestock Development and Animal Health Project (P122123)

PROJECT APPRAISAL DOCUMENT

AFRICA

AFTAR

Basic Information

Date:	February 1, 2012	Sectors:	Animal production (60%), Agro-industry, marketing, and trade (20%), General agriculture, fishing and forestry sector (20%)
Country Director:	Kundhavi Kadiresan	Themes:	Rural services and infrastructure (40%), Global food crisis response (30%), Other rural development (30%)
Sector Manager/Director:	Karen Mcconnell Brooks/Jamal Saghir		
Project ID:	P122123	EA Category:	B - Partial Assessment; non-transferred
Lending Instrument:	Specific Investment Loan		
Team Leader(s):	Alex Mwanakasale, TTL; Stephane Forman, co-TTL		

Does the project include any CDD component? No

Joint IFC: No

Borrower: Ministry of Finance and National Planning (MoFNP), Lusaka, Zambia

Responsible Agency: Ministry of Agriculture and Livestock (MoAL), Lusaka, Zambia

Contact:	Dr. David Shamulenge, MoAL, P.O. Box 50197, Independence Avenue, Ridgeway, Lusaka, Zambia.	Title:	Permanent Secretary
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Project Implementation Period:	Start Date:	February 28, 2012	End Date:	June 30, 2018	
Expected Effectiveness Date:	June 30, 2012				
Expected Closing Date:	June 30, 2018				

Project Financing Data(US$M)

[ ] Loan	[ ] Grant	[ ] Other
[X] Credit	[ ] Guarantee	

For Loans/Credits/Others

Total Project Cost (US$M):	64.75
Total Bank Financing (US$M):	50.00

Financing Source	Amount(US$M)
BORROWER/RECIPIENT	9.89
International Development Association (IDA)	50.00
Beneficiaries	4.86
Total	64.75

Expected Disbursements (in US$ Million)

Fiscal Year	2012 (PPF)	2013	2014	2015	2016	2017	2018
Annual	1.00	4.89	9.20	10.74	10.23	9.10	4.84
Cumulative	1.00	5.89	15.09	25.83	36.06	45.16	50.00

Project Development Objective(s): To improve the productivity of key livestock production systems for targeted female and male smallholder producers in selected areas of the Recipient's territory.

Components

Component Name	IDA Cost (US$ Millions)
Component 1 - Livestock Services Provision	25.45
Component 2 - Productive On-Farm Investments	18.15
Component 3 – Project Management	5.40
Project Preparation Facility	1.00

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes	[ ]	No	[**X**]
Does the project require any exceptions from Bank policies?	Yes	[ ]	No	[**X**]
Have these been approved by Bank management?	Yes	[ ]	No	[ ]
Is approval for any policy exception sought from the Board?	Yes	[ ]	No	[**X**]
Does the project meet the Regional criteria for readiness for implementation?	Yes	[**X**]	No	[ ]

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36		**X**
Pest Management OP 4.09	**X**	
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waters OP/BP 7.50		**X**

Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
1. **Project Administration**		By Effectiveness	
Description of Condition: The Recipient has: (i) established the Project Steering Committee, Technical Committee, Project Coordination Office and Provincial Project Coordination Offices; and (ii) assigned the staff for the Project Coordination Office and the Provincial Project Coordination Offices, all in accordance with Section I.A of Schedule 2 to the Financing Agreement.			
2. **Project Implementation Manual**		By Effectiveness	
Description of Condition: The Recipient has adopted the Project Implementation Manual in accordance with Section I.B.1 of Schedule 2 to the Financing Agreement.			
3. **Disbursement Conditions**		Prior to Disbursement	
Description of Conditions: No withdrawal shall be made: (a) for payments made prior to the date of the Financing Agreement; or (b) under Category (2) unless the Emergency Animal Disease Control Fund (EADCF) Operational Manual has been adopted in accordance with Section I.B.3 of Schedule 2 to the Financing Agreement; or (c) under Category (3) unless the Recipient has: (i) recruited a matching grant specialist in Section I.D.6 of Schedule 2 to the Financing Agreement; (ii) adopted a Subproject Manual in accordance with Section I.D.1 of Schedule 2 to the Financing Agreement; and (iii) for each respective Subgrant, a Subgrant Agreement has been executed in accordance with Section I.D.4 of Schedule to the Financing Agreement.			

Team Composition

Bank Staff

Name	**Title**	**Specialization**	**Unit**	**UPI**
Alex Mwanakasale	Agricultural Officer	Team Lead (TTL)	AFTAR	
Stephane Forman	Livestock/Animal Health Specialist	Co-TTL	AFTAR	
Indira Janaki Ekanayake	Senior Agriculturist		AFTAR	
Iain Shuker	Program Coordinator		AFTAR	
Karen Mcconnell Brooks	Sector Manager		AFTAR	
Pauline McPherson	Operations Officer		AFTAR	
Melissa Brown	Economist		AFTAR	
Germaine Ethy	Program Assistant		AFTAR	
Nancy Ruth Morgan	Senior Livestock Economist		ARD/FAO Liaison	
Marjorie Mpundu	Senior Counsel		LEGAF	
Luis Schwarz	Senior Finance Officer		CTRLA	
Fenwick M. Chitalu	Financial Management Specialist		AFTFM	
Pazhayannur K. Subramanian	Lead Financial Management Sp.		AFTFM	
Pirkko Leena Poutiainen	Gender Specialist		ARD	
Wedex Ilunga	Sr. Procurement Specialist		AFTPC	
Mohamed Khatouri	Lead Monitoring& Evaluation Sp.		AFTDE	
Lungiswa Thandiwe Gxaba	Senior Environmental Sp.		AFTEN	
Mary C.K. Bitekerezo	Sr. Social Development Sp.		AFTCS	
Archana Challa	Finance Assistant		CTRDM	
Satish Kumar Shivakumar	Finance Analyst		CTRDM	

Hellen Mungaila	Team Assistant		AFCS3	

Non Bank Staff

Name	Title	Office Phone	City
Marc Moens	Sr. Livestock Sp./FAO Team Leader		
David Wendover	Livestock Specialist/Consultant		
Trevor Wilson	Institutional Specialist/Consultant		
Andrea Pozza	M&E Specialist/Consultant		

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Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Zambia	Eastern, Southern and Western provinces	All districts in these provinces			
	Disease Free Zone comprising Central, Lusaka and parts of Copperbelt provinces	All districts in Central and Lusaka provinces and Mpongwe and Masaiti districts on the Copperbelt province			

I. STRATEGIC CONTEXT

A. Country Context

1. Zambia's recent economic performance has been encouraging with growth rates averaging 6 percent per annum during the latter half of 2000s. Despite impressive economic growth, poverty levels have remained persistently high, especially in the rural areas. Over the 1998-2006 periods, the poverty head count experienced only a modest decline from 67 to 59 percent while rural poverty remained significantly higher, falling from 83 to only 77 percent (CSO). Broad based and higher growth rates are needed if Zambia is to reach its first Millennium Development Goal (MDG) which aims to reduce the proportion of Zambians living in extreme poverty by 50 percent[1]. Zambia[2] has immense, untapped mineral and agricultural resources. Less than half of Zambia's 23 million hectares (ha) of potential arable land is used for agriculture and its substantial water resources are largely underutilized.

2. Zambia's growth is driven by copper mining, construction and tourism. Agriculture accounts for a relatively small share of the economy due to the importance of the mineral sector. Yet most people still depend on agriculture since earnings from copper are not widely distributed. The economy remains vulnerable to instability in the global metals markets as unexpected declines in copper prices could weaken Zambia's prospects for sustainable growth. Livestock plays a key role in contributing to rural incomes, diversification of sources of earnings and risk management. In the traditional sector, livestock serve as "walking" savings accounts to counter drought and fluctuations in the exchange rate, prices and employment in the mines.

3. Zambia has long sought for ways to diversify its economy away from the reliance on copper to foster broad based economic growth. The Government has targeted agriculture as a priority sector in poverty reduction and food security as two thirds of the population live in rural areas and relies on the agricultural sector for their livelihoods. The livestock sector is relatively unexploited but recognized as an increasingly dynamic part of the agricultural economy. While livestock contributes 35 percent to agricultural value-added, the potential to expand the sector's contribution to economic growth is high given its natural resource base (four times more grazing than arable land) and favorable market prospects to drive the diversification agenda. The livestock industry has also a strong bearing on poverty-stricken communities, either directly through the provision of produce and services such as animal draught power and transport or indirectly through the provision of employment and wealth creation.

B. Sectoral and Institutional Context

4. Agricultural production in Zambia is markedly dualistic. Currently, an efficient commercial sector exists comprising less than 2,000 corporate and large commercial farms but utilizes 20 percent of the land. The remaining land is populated by approximately 1.1

[1] The MDG target refers to halving the 1991 extreme poverty level of 59 percent by the year 2015.
[2] A landlocked nation bordering eight countries; Zambia's neighbors include: Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, Congo Democratic Republic and Tanzania.

million households in the "traditional sector" which is characterized by high poverty levels, smallholder mixed farming systems and low productivity. Among these mixed crop-livestock farming households, cattle and goats provide a significant income source for many rural communities, contributing 39 percent to income. Nearly half of the rural households own livestock with approximately 310,000 rural households owning cattle. Livestock distribution in the country indicates that Southern, Eastern, Western and Central Provinces account for 89 percent of the total cattle population with the remaining 11 percent found in Copperbelt, Northern, North-Western, Lusaka and Luapula Provinces. The Eastern and Southern Provinces account for 80 percent of the goat population and 83 percent of the total pig population.

5. Zambia's long term livestock sector strategy is to establish a Disease Free Zone[3] with an objective of accessing international markets for livestock and meat products. In the short to medium term, the proposed Livestock Development and Animal Health Project (LDAHP) would underpin this strategy and contribute to improving veterinary and livestock services, food safety and productivity of the smallholder production systems. In a recent World Bank report on Zambia's beef and dairy industries,[4] the potential for expanding market opportunities for commercially-oriented livestock producers is supported by increasing domestic demand for livestock products as income levels rise, particularly in urban areas. Beef demand is currently estimated to be rising at the rate of 5-7 percent per annum (pa) and dairy products at 10 percent pa. Despite increased investment in retail outlets, per capita consumption levels is still among the lowest in Southern Africa, implying that there is potential for growth including scope for import substitution[5]. Currently, large commercial operators provide animal products to urban areas but, increasingly, a lack of available animals constrains their ability to effectively utilize their capacity. There is considerable scope for smallholders to supply to more formalized commercial markets while meeting the growing demand in rural markets. However, investments and capacity building are required to secure the position of smallholders as suppliers of quality animal products.

6. 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 unacceptable losses due to animal diseases. However, productivity improvements in the sector face a number of challenges. The smallholder cattle sector is characterized by slow animal growth rates (5-8 years to reach market weight), high calf and adult mortality rates (20-30 percent and 9 percent respectively), and low reproductive performance. In contrast, production ratios for the commercial sector feature low calf mortality (1-2 percent), high reproductive rates (65-70 percent) and an off take between 17-18 percent. Despite Government support and recognition of the considerable potential for increased livestock production, livestock

[3] The Disease Free Zone would start in a designated area located in the center of the country and progressively expand to the rest of Zambia.

[4] "What would it Take for Zambia's Beef and Dairy Industries to achieve their Potential", June 2011, Report No. 62377-ZM.

[5] For example, meat and milk consumption per capita was estimated at 6.03 kg and 7.4 liters for Zambia (UNFAO's State of Food and Agriculture, 2005) respectively compared to 8.96 kg and 17.1 litres for Zimbabwe and 12.32 kg and 75.8 liters for Kenya. Imports of dairy products have increased significantly in recent years from less than US$3 million in 2002 to US$12 million in 2008.

diseases[6] continue to be a major constraint to increasing production. Consequently, the control of these diseases and their vectors can contribute significantly to productivity improvements. Other factors responsible for low productivity include: (i) inadequate infrastructure for livestock production, processing and marketing; (ii) weak extension and advisory services; and (iii) absence of, or weak, producer organizations.

7. The LDAHP would serve to redress some of the investment and policy biases inherent in supporting agricultural development in Zambia. Its agricultural policy has been historically biased towards the maize sub-sector with massive expenditures on fertilizer subsidies and maize price support[7] with the specific objective of improving national food security. The Ministry of Agriculture and Livestock (MoAL) has traditionally retained the key responsibilities for all aspects of major animal disease control and provision of advisory services. However, declining resource allocations prior to 2009[8] seriously impeded its capacity for service delivery at the farmer level. A more balanced approach towards rural development will also be supported by separate livestock policy documents derived from a number of existing documents such as: (i) the livestock component of the existing National Agricultural and Cooperatives Policy 2004-2015 (under revision); (ii) Livestock disease control strategy; (iii) Livestock Service Center Program; and (iv) Livestock Development Plan 2000-2004 (under revision). The ongoing implementation of the ALive[9] Livestock Investment and Policy Toolkit which is funded in parallel by the World Bank-administered Trust Fund for Statistical Capacity Building (TFSCB) will provide added information.

C. Higher Level Objectives to which the Project Contributes

8. Zambia's long-term development objectives are well articulated in the National Vision 2030 which is "to become a prosperous middle income country by the year 2030." The Vision 2030 identifies a number of development goals, which include: (a) reaching middle-income status; (b) significantly reducing hunger and poverty; and (c) fostering a competitive and outward-oriented economy. The Government has embarked on the implementation of the Sixth National Development Plan (SNDP, 2011-15) whose main goal is to increase and diversify agricultural production and productivity so as to raise its share of GDP. The SNDP will build on the foundation set by the Fifth National Development Plan (FNDP, 2006-10) and will seek to attain the following overarching objectives: (i) to accelerate infrastructure development, economic growth and diversification; (ii) to promote rural investment and accelerate poverty reduction; and (iii) to enhance human development.

[6] Livestock diseases include highly contagious diseases such as Foot-and-Mouth Disease (FMD) in cattle; Contagious Bovine Pleuropneumonia (CBPP) in ruminants; African Swine Fever (ASF) in pigs; and Newcastle Disease (ND) in poultry. Also included are "management" diseases, particularly East Coast Fever (ECF) and internal parasites.

[7] Public spending in the agricultural sector is low representing about 7-8 percent of the Government of the Republic of Zambia's (GRZ) budget or 1 percent of GDP (2008) and this expenditure has been skewed towards fertilizer subsidies and maize price support. Between 60 and 70 percent of agriculture spending is on fertilizer subsidies and maize purchases by the Government owned Food Reserve Agency.

[8] In late 2008, Government split the Ministry of Agriculture and Cooperatives into two ministries by the creation of a new Ministry of Livestock and Fisheries Development. Funding to the new Ministry of Livestock started improving in 2009 largely because it enjoyed new visibility. However, following the elections of September 2011 which ushered in a new government, the two ministries have since been merged.

[9] Africa Livestock (ALive) is a partnership of technical institutions including the African Union -IBAR, Food and Agricultural Organization, World Organization for Animal Health (OIE), and World Health Organization - AFRO to foster livestock development.

9. The LDAHP will directly contribute to increased rural incomes, accelerated and shared growth and rural poverty reduction. It is aligned with the World Bank's new Africa Strategy (March 2011) Pillars I and II[10]. Current Bank projects in the rural sector aim at reinforcing the delivery of basic services and supporting agricultural diversification, as well as sustaining natural resources management. However, they do not explicitly serve the need to increase livestock production and reduce animal disease occurrence which should contribute most to rural income growth, rural food security, poverty alleviation and better public health. The proposed project would address these areas by improving smallholder productivity of selected livestock production systems, improving smallholder access to markets, animal disease control, as well as better natural resources management. This is in line with the Bank's Country Assistance Strategy (CAS, 2008-2011) goal of supporting governance, transparency, business environment and agriculture development; as well as contributing to foreign exchange earnings. Since the livestock sector contributes approximately 39 percent to rural incomes, this project will contribute to the key CAS objectives of accelerated and shared growth and hence lead to a reduction of rural poverty. The project will also contribute to the CAS objective of increased employment opportunities, and reduced income risks in rural areas. The project is aligned with Zambia's Comprehensive Africa Agriculture Development Program (CAADP) Compact Pillars I and III[11].

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

10. The Project Development Objective (PDO) is to improve the productivity of key livestock production systems for targeted female and male smallholder producers in selected areas of the Recipient's territory. Specifically, the project will 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[12].

B. Project Beneficiaries

11. **Direct Beneficiaries:** The project will benefit 390,000 female and male smallholder producers in the targeted areas who rear cattle, small ruminants (sheep and goats), pigs and poultry, including members of producer organizations. The project will specifically target female group members of these organizations. Other direct beneficiaries will include 560 staff members in the MoAL who will receive training using project funds.

12. **Indirect Beneficiaries:** Indirect beneficiaries include the remainder of the 1.1 million farmers who keep livestock and are not directly targeted by the project. These producers will indirectly benefit from improved control of animal diseases while value chain stakeholders

[10] New Africa Strategy, Pillar 1: Competitiveness and Employment, and Pillar II: Vulnerability and Resilience.
[11] Zambia's CAADP compact was signed in January 2011; CAADP Pillar I – Land and Water Management and Pillar III – Food security and Hunger.
[12] The targeted areas include districts in the Government's Disease Free Zone. This Zone is located in Central, Lusaka and two districts of Copperbelt provinces. The government intends to adopt the Progressive Zoning Approach which is the gradual, progressive and sustained intensification of veterinary services provision (e.g., surveillance, control, laboratory services, district by district, in key livestock producing areas).

will profit from increased animal supply numbers. On the consumption side, many of the 13 million consumers in Zambia will benefit from better quality meat product. Other beneficiaries are livestock industry service providers, including private extension agents and veterinarians, sellers of other inputs, including veterinary medicines.

C. PDO Level Results Indicators

13. The outcome indicators against which the PDO will be measured are: (i) Reduction in the prevalence rate in the project areas of: Newcastle Disease (ND) in poultry (percent); and Contagious Bovine Pleuropneumonia (CBPP) and Foot and Mouth Disease (FMD) in cattle (percent); (ii) Increase in livestock productivity in project areas measured by: reduced hen mortality[13] (percent); reduced kid (young goats of 0-6 months) mortality per year (percent); increased weaned piglets per sow per year (number); increased milk per cow per day (litres); and (iii) Direct project beneficiaries (number), of which female (percentage).

III. PROJECT DESCRIPTION

14. The project's focus will be to control livestock diseases of an epidemic nature and with trans-boundary (regional/international) significance and enhance the productivity of smallholder livestock producers. The project will target production systems (see Annex 2 for description of these systems) from selected animal species including cattle, sheep and goats, poultry and pigs. The project will strengthen veterinary services (public and private) and address other identified constraints by supporting productive investments (infrastructure, equipment, and technologies) and improve technology transfer and access to advisory and extension services by encouraging the formation of groups. The use of Community Livestock/Animal Health Workers and private service providers will be scaled up. The project will prioritize the introduction of technologies that reduce livestock mortality particularly in young stock, and improve reproductive efficiency to enable animals to quickly reach optimum slaughter weight.

15. To support this effort, the project will provide equipment, rehabilitate or construct critical public and community infrastructure, and facilitate skills training of front line animal production and veterinary staff. To strengthen capacity of sector institutions, the project will provide logistical support and academic and technical/management skills training for public national institutions and producer organizations.

16. Targeted support will cover the major animal rearing provinces including Eastern, Southern, and Western provinces. The designated Disease Free Zone area which includes Central and Lusaka provinces as well as two districts of Copperbelt province will be covered.

[13] Poultry mortality is being used as a proxy indicator for productivity improvement in poultry.

A. Project Components

17. The project will have three components: (i) Livestock Services Provision; (ii) Productive On-Farm Investments; and (iii) Project Management. The project is expected to be implemented over a six year period.

18. **Component 1: Livestock Services Provision (US$33.08 million of which IDA US$25.45 million and GRZ US$7.63 million).** The objectives of this component are to: (i) strengthen the zoonotic and contagious animal diseases surveillance and control systems, including laboratory diagnostic capacities; (ii) build institutional capacity within the MoAL to improve service delivery; and (iii) improve the capacity to monitor food safety of facilities (slaughterhouses, milk collection centers, etc.) in the targeted project areas. This component will support the strengthening of Veterinary Services, achieving an appropriate balance between public and private sector and professional and paraprofessional staff, as defined by the World Organization for Animal Health (OIE). It will build on the evaluation of the performance of the Veterinary Services (PVS) using the PVS Tool, that was carried out in July 2008 by the OIE and the subsequent Gap Analysis conducted recently where national priorities were defined. The component will support the following activities:

19. ***Sub-Component 1.1: Strengthening the Surveillance, Diagnostic and Control of Animal Diseases (US$11.75 million of which IDA US$9.89 million and GRZ US$1.86 million)***: This sub-component will support the strengthening of active surveillance systems for zoonotic and major contagious animal diseases and scale-up vaccinations against major diseases. It will provide support to pre-defined disease control strategies including vaccination campaigns and progressive zoning approach, in collaboration with the private sector. The main focus will be on major identified diseases of high economic importance (FMD, CBPP, ECF, ND, ASF) but some flexibility will be allowed for other specific needs (see Annex 2). This sub-component will also help to establish a network of Community Livestock/Animal Health Workers[14] who will be first call service providers to producers' groups for animal health services provision. The sub-component will 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. The sub-component will provide support for laboratory capacity improvement through: (i) laboratory infrastructure improvement; (ii) equipment, material and consumables; (iii) training of laboratory staff; and (iv) development and implementation of a quality management system to access accreditation for specific tests. This sub-component will also support the operationalization of an independent Veterinary Council aimed at regulating the veterinary profession (see Annex 2).

20. ***Sub-Component 1.2: Support for Livestock Infrastructure and Access to Services (US$13.04 million of which IDA US$8.44 million and GRZ US$4.60 million).*** This sub-component will support the MoAL and Local Authorities to establish or rehabilitate essential

[14] The Community Livestock/Animal Health Workers will be directed by a responsible public or mandated private qualified official.

livestock infrastructure (e.g., Livestock Service Centers (LSCs)[15], markets, slaughter facilities, etc.) in agreed locations subject to an Infrastructure Inventory and Needs Assessment. Management of such publicly-owned infrastructure will be covered under a contractual arrangement with the private sector as appropriate. Selection of investments to be supported under this sub-component will be coordinated along with those being implemented by other donors and projects. Criteria for determining the optimal type and location of public investments will be detailed in the Project Implementation Manual (PIM).

21. ***Sub-Component 1.3: Institutional Support to MoAL (US$8.29 million of which IDA US$7.12 million and GRZ US$1.17 million).*** The sub-component will 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. Activities under this sub-component will include: (i) a comprehensive needs assessment and training plan for the Ministry as a pre-requisite to training activities; (ii) formal and in-service training of Ministry staff in selected disciplines where major gaps have been identified; (iii) vehicles and office equipment to improve efficient delivery of advisory and technical services to farmers; (iv) preparation and implementation of development plans of key training institutions offering tertiary and advanced level training in animal health and livestock production (i.e., Zambia Institute of Animal Health (ZIAH) and the Palabana Dairy Training Institute (PDTI)); (v) assist in developing and implementing a Livestock sector monitoring and evaluation (M&E) system – Livestock Information Management System (LIMS) - including strengthening and decentralizing the LIMS to improve data analysis; (vi) assist MoAL to develop and adopt a breeding strategy, supported by a budgeted investment plan for sustainable management of the country's animal genetic resources; and (vii) support the design and pilot the implementation of a farm and animal identification and traceability system, in close collaboration with the private sector. Specific support will also be provided to develop and implement, key policy options, institutional reforms and review of the legislative framework to building an environment for sustainable growth of the livestock sector. Other support will 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 will support the operationalization of the national "Emergency Animal Diseases Control Fund" (EADCF) established under the Animal Health Act, through a flexible budget arrangement which would make financial resources available when they are needed (see Annex 2). The resources for the Fund made available under the project would finance the goods, services, and operational costs associated with controlling a disease outbreak and could also include compensation payments to farmers for culled animals. The operational modalities of the Fund will be developed in the first year of the project.

22. **Component 2: Productive On-Farm Investments (US$23.12 million of which IDA US$18.15 million; Beneficiaries US$4.86 million and GRZ US$0.11 million):** The

[15] The MoAL plans to establish Livestock Service Centers (LSCs) (Tier 1, 2 and 3), and other essential livestock industry infrastructure (markets, slaughter facilities, etc.) in agreed locations, among the current veterinary camps which now number 1,024, where no such infrastructure currently exist. Tier 1 LSCs could include crush pens, holding pens, dip tanks, water troughs. Tier 2 could include Tier 1infrastructure plus a Camp house, weighing scale, office store room, loading and off loading bay and a market center. Tier 3 are proposed to supplement Tier 2 infrastructure with a livestock training center, possibly including demonstration structures e.g., pasture, biogas and slaughter facility.

objective of this component is to improve productivity of identified production systems through grant support to on-farm investments.

23. 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 will comprise three grant windows for: (i) productive on-farm investments; (ii) transfer of technology in the area of pasture management/forage development; and (iii) strengthening the role of producer associations to provide services to farmers.

24. Smallholder access to services and markets would be improved through group formation, provision of essential livestock infrastructure, and delivery of improved technology packages by Ministry field staff augmented by Community Livestock/Animal Health Workers and private service providers. More specialized advisory services and technical packages would be made available through producer organizations. Support would also be provided for range and pasture improvement and utilization and dry season feeding technologies. This component will support the following sub-components:

25. ***Sub-Component 2.1: Support for the Livestock Improvement Grant Facility (US$19.07 million of which IDA US$14.69 million; Beneficiaries US$4.33 million and GRZ US$0.05 million):*** A Livestock Improvement Grant Facility (LIGF) will be created to allow eligible smallholder producers (groups or cooperatives) and other livestock industry stakeholders to establish productive livestock investment packages (i.e., sub-projects). These packages would include, *inter alia*, 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.

26. ***Sub-Component 2.2: Pasture Management and Forage Development (US$2.23 million of which IDA US$2.20 million IDA; and GRZ US$0.03 million):*** Improving range productivity and on-farm establishment and utilization of forage including legumes, are critical. This sub-component will 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 (see Annex 2). Adoption of participatory range land management techniques and grass/fodder production methods used by farmers will be facilitated by this sub-component. Specific proposals from eligible institutions will be selected by the project's Technical Committee (TC), after a thorough review by the Project Coordination Office (PCO) on the basis of criteria which would include a ceiling per proposal specified in the PIM, a maximum of two years implementation period, direct measurable impact on project beneficiaries with clear performance and impact indicators; leveraging ongoing activities. Farmers who are unable to join formal groups but require access to more specialized farm management and business planning advisory services on an individual basis, as well as access to credit for on-farm investments, will be supported by the project through the funding of technical assistance

to enhance agri-business and technical farming skills, as well as to prepare investment packages for submission to other credit agencies for funding.

27. ***Sub-Component 2.3: Strengthening Capacities of Non-Public Service Providers (US$1.82 million of which IDA US$1.26 million; Beneficiaries US$0.53 million; and GRZ US$0.03 million):*** This sub-component will 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 not 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).

28. ***Component 3: Project Management (US$7.55 million of which IDA US$5.40 million and GRZ US$2.15 million).*** The objective of this component is to ensure efficient and timely delivery of project resources in accordance with its objectives. It will support the establishment, operation, equipment 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 TC. The component will also finance: (i) implementation and administration of the LIGF; (ii) M&E activities including regular impact evaluation studies and audits; management and oversight of safeguards issues; and (iii) preparation and implementation of a communication strategy. Project support for various components and activities will be included as part of general project management.

B. Project Financing

1. Lending Instrument

29. The total cost of the proposed project is US$64.75 million. The project will be financed by an IDA Credit of US$50.00 million equivalent. The IDA lending instrument will be a Specific Investment Loan (SIL). GRZ's contribution will be US$9.89 million equivalent, primarily in the form of foregone taxes. Beneficiary co-financing, comprising mainly private sector, service providers and producers, will contribute US$4.86 million equivalent.

2. Project Cost and Financing

Project Components	Total Project Cost (US$ million)	World Bank/IDA Financing (US$ million)	World Bank/IDA Financing (%)
Component 1: Livestock Services Provision	**33.08**	**25.45**	77
Strengthening the Surveillance, Diagnostic and Control of Animal Diseases	11.75	9.89	84
Support for Livestock Infrastructure and Access to Services	13.04	8.44	65
Institutional Support to MoAL	8.29	7.12	86
Component 2. Productive On-Farm Investments	**23.12**	**18.15**	79
Livestock Improvement Grant Facility	19.07	14.69	77
Pasture Management and Forage Development	2.23	2.20	99
Strengthening Capacities of Non-Public Service Providers	1.82	1.26	69
Component 3: Project Management	**7.55**	**5.40**	72
Component Total	**63.75**	**49.00**	77
Project Preparation Facility	1.00	1.00	100
Total Project Costs	**64.75**	**50.00**	77

Note: contingencies, both physical and price, are included in the individual sub-components.

C. Lessons Learned and Reflected in the Project Design

30. The project's design is based on lessons drawn from past investment operations in the agricultural sector.

31. ***Project design should ensure the sustainability of investments.*** The Operations Evaluation Department (OED) performance assessment report (2003) of the Agricultural Sector Investment Project (ASIP) rated sustainability of its investments as unlikely. ASIP's Implementation Completion and Results Report (ICR) pointed out that only activities which had a strong element of private sector interest and support had any real prospect of sustainability after the end of project support. Sustainability of investments which relied entirely on public sector implementation (e.g., policy and institutional improvements, research, extension and rural infrastructure) continued to depend on the prospects of further donor support. The design of the LDAHP has taken into account the need to balance between public (Component 1 - Livestock Services Provision) and private (Component 2 - Productive On-Farm Investments) sector investments to generate a minimum rate of return of 12 percent.

32. ***Estimates of the project economic benefits should be realistic***. The OED report and ICR pointed out that the ASIP had only a limited impact on improving the lives of smallholder farmers. The methodology used to calculate economic benefits predicted over-optimistic economic benefits. The optimal scope of the project size and investment mix should be guided by a realistic economic and financial analysis. As part of the analysis, the LDAHP has made realistic assumptions about estimating net benefits resulting from animal disease control (see Annex 6) while at the same time acknowledging the challenges to ex-ante analysis of measuring quantifiable benefit streams related to disease control. Financial analysis of possible investment packages under the matching grant has been calculated and all except milk collection centers give an Internal Rate of Return of over 20 percent.

33. ***Monitoring and evaluation of project performance***. Setting up a solid project M&E system and maintaining it throughout the project is critical in order to enable project management to check and assess implementation performance. Lessons from the Bank-financed Zambia Agricultural Marketing and Processing Infrastructure project demonstrated that neglect in setting up the M&E system resulted in a poor assessment of implementation progress and hindered assessment of its impact on intended beneficiaries. The LDAHP has ensured that an externally recruited M&E Specialist is part of the project management team and support for training and scaling up the Livestock Management Information System and other M&E activities are budgeted.

34. ***Ensuring linkages and building on in-country livestock initiatives.*** Benefitting from the lessons learned from the IFAD Smallholder Livestock Investment Project (SLIP) which became effective in September 2007 and is due to be completed in 2013, the LDAHP will ensure linkages to on-going disease control initiatives, review and adapt piloted SLIP activities such a District Livestock Information system, and ensure dialogue with the newly established Livestock Production Unit in the MoAL. SLIP's project experience recently prompted them to re-orient their activities to include improving animal husbandry practices of livestock farmers through better access to markets; they are consequently developing

livestock extension training packages. A key priority will be placed on ensuring dialogue between the projects on best practices related to innovative provision of livestock services.

35. ***Sustainability and impact of rural infrastructure investments***. Experience from the Rural Investment Fund (RIF) and Zambia Social Investment Fund (ZAMSIF) shows that rural infrastructure investments which have the highest impact are those that complement similar investments, have embedded mechanisms to ensure operational and financial sustainability, have strong community cohesion, and include a sufficiently broad menu of items to respond to beneficiaries' priorities. Although infrastructure investments have been popular with community groups as it provided something tangible on the ground, ex-post evaluations have often shown poor economic and financial returns. For example, investments in productive and social assets are often not operational due to constraints in accessing working credit, or unwillingness of communities to provide resources for maintenance. A needs assessment prior to any rural infrastructure investment has been designed in the project and sub-projects and such an assessment will pay particular attention to operations and maintenance to ensure sustainability.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

36. The project will be implemented under the overall responsibility of MoAL. A PSC, chaired by the Permanent Secretary of MoAL, and assisted by a TC will provide policy guidance and oversight. Within the Ministry, a PCO headed by a National Project Coordinator (NPC) will be established to ensure overall project management and coordination and will serve as the lead implementation agency. More specifically, the PCO will: (i) prepare annual work plans and budgets (AWPBs) and consolidated project reports; (ii) develop communication and outreach strategies and tools including guidelines and standard formats for the disbursement of grants and M&E; (iii) pre-qualify and organize training of technical service providers for use under sub-component 1.3; (iv) and pre-qualify and submit proposals to the TC under the Pasture Management and Forage grant and Producers' organization Matching Grant; and (v) establish and undertake M&E of the project. Coordination at provincial levels will be carried out by Provincial Project Coordination Offices (PPCOs). Both PCO and PPCOs will comprise: (i) civil servants from the public administration to be assigned to the project on a full time basis; and (ii) contracted staff in specific areas to fill technical gaps not available in the Ministry.

37. Additional support to project implementation will be provided through: (i) provincial and district extension structures of the MoAL to strengthen links with producers and participate in sub-projects pre-screening and selection; (ii) local service providers to assist LIGF applicant groups in preparing their sub-projects; (iii) Grant Committees (GC) and technical specialists to assess sub-projects and ensure final quality and selection; and (iv) specific implementation agreements for activities under the overall oversight of the PCO.

38. The establishment of the PSC, TC, PCO, and PPCO; and assignment of the staff for the PCO and the PPCO are a condition of project effectiveness.

39. A PIM will be prepared by MoAL and reviewed by the World Bank prior to project effectiveness. The PIM will detail the organizational and technical procedures that will govern the project, including financial management and procurement. A separate sub-projects manual will be prepared which will detail the procedures for co-financing of sub-projects under the LIGF as it relates to the grant facility mechanism, eligibility criteria, technical and fiduciary, including social accountability. The sub-projects manual will be included as a disbursement condition. There will also be a separate manual prepared for the EADCF. This manual will also be included as a disbursement condition.

B. Results Monitoring and Evaluation

40. The results framework in Annex 1 defines performance indicators for each component and sub-component. A baseline study has been included as part of the Project Preparation Facility (PPF) in order to fine-tune performance indicators. An M&E module acceptable to IDA will be prepared as part of the PIM. The PCO will be responsible for overall M&E and complying with agreed reporting requirements. The PCO will establish, host and maintain within the MoAL, a project- specific Management Information System (MIS) and M&E framework. The PCO's M&E specialist will also be responsible for providing training courses to PPCOs focal point staff and MoAL's M&E staff, to ensure that the required information will be made available and prescribed in a uniform reporting process. At the district level, the focal points will monitor implementation of sub-projects, collect and transmit data to the PPCOs who will be responsible for analyzing and transmitting the data to the M&E specialist at the PCO.

41. The M&E system will be designed to link technical and financial data on project progress and impact. It will also be linked to a Geographic Information System (GIS) in order to spatially report and display the results and gender indicators that are included in the project's results framework. The M&E system will support project supervision by ensuring follow-up surveys and data collection for the key performance indicators. It will include regular surveys, impact evaluation and annual user satisfaction surveys. It will also include environmental monitoring indicators and allow gender-disaggregated indicators.

C. Sustainability

42. Sustainability of project investments is imbedded in its design which ensures: (i) an appropriate balance between investments in the public sector, supported by appropriate levels of recurring expenditure support; and (ii) investments that generate productivity improvements and returns on investment at the farmer level that guarantee financial sustainability.

43. Investment in expanded public sector services and the construction of new infrastructure will be accompanied by adequate assurances from Government of the necessary increase in recurrent public expenditures. The project will rehabilitate existing infrastructure and use models that will improve the efficiency of service delivery at the farmer level, such as targeting groups of smallholder farmers for animal health services through the proposed LSCs and formalizing the role of Community Livestock/Animal Health Workers. Proposed

community infrastructure would be demand-driven, operated and maintained by the private sector on a cost recovery basis and packaged in a manner that ensures financial sustainability. The proposed investment models will generate a farmer income level that will sustain an animal health and nutrition plan and pay for the services that will be offered to sustainably improve productivity.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Area	**Rating**
Stakeholder Risk	Moderate
Implementing Agency Risk	
- Capacity	Substantial
- Governance	High
Project Risk	
- Design	Low
- Social and Environmental	Moderate
- Program and Donor	Low
- Delivery Monitoring and Sustainability	High
Overall Implementation Risk	Substantial

Overall Risk Rating Explanation

44. Project overall risk rating is substantial. The change in Government and new administration could result in delays in decision-making in preparing and implementing the project. In addition, the country's high dependence on the performance of the mining sector given fluctuations in global copper prices could weaken the country's prospects for sustainable growth which could adversely affect project implementation. The recent merger of Ministries of Agriculture and Cooperatives and Livestock and Fisheries Development into the MoAL is a positive aspect as it will help to mitigate implementation risks associated with field level capacity since the combined ministries would provide adequate numbers of field staff to deliver the project. However, inadequate skills in the area of animal husbandry within MoAL has been identified and will be mitigated by planned training and re-training of existing Ministry staff under Component 1. Overall, the project design is relatively simple and its objectives are focused, although project area is large and the risk of re-emergence of highly contagious animal diseases could affect the productivity objective. Effective coordination with other donor partners who are re-engaging in this sector will be critical. Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and updated January 2011, shall apply to the project. In addition, a project-specific Governance Management Framework has been prepared to provide safeguards for effective delivery of results under a transparent and accountable environment. The framework identifies potential risks and

incorporates risk mitigation measures (see Annex 7 for details). Overall responsibility for implementing the governance framework resides with the PCO.

45. The Governance issues that have been considered in this project include the reduction of risk associated with elite capture during the implementation of the matching grant facility. This will be done by creating a transparent and all inclusive assessment and approval process which would eliminate the likelihood of collusion among GC members and administrative structures. All infrastructure sub-projects would be conditioned upon a full needs assessment to determine optimum location and agreed mode of management. This would guarantee operations and maintenance to ensure the sustainability of the infrastructure. A transparent and participatory process that involves stakeholders has been designed. The following key issues have been taken into account: (i) robust criteria for grants eligibility; (ii) participatory M&E system that involves all beneficiaries and civil society (fully considered under M&E budget); (iii) PSC that includes producer organizations and service providers; (iv) Matching GC at provincial level incorporating civil society organizations; and (v) pre-screening of sub-project proposals at district level to certify that applicants are members of the local communities and are engaged in agricultural activities.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

46. The economic benefits resulting from proposed investments in the project would stem from improved livelihoods as higher livestock productivity is generated through: (i) support to key livestock infrastructure, e.g., livestock service centers; (ii) investments in productive packages for producers and farm enterprises through a matching grant mechanism; and (iii) productivity improvement generated by the decreased animal mortality and morbidity resulting from improved disease surveillance, vaccination and early response to animal disease outbreaks.

47. For those investments with quantifiable benefit streams such as: (i) the establishment of LSCs which provide supportive animal health and marketing services; and (ii) productive investments under the proposed matching grant scheme, the estimated internal rate of return ranges between 15 and 31 percent. Interventions which support livestock marketing provide the greatest returns. Meanwhile, the farm level enterprise investments proposed models for inclusion under the matching grant include: (i) productivity improvements in specific farm enterprise models, such as in the beef, poultry, and pig sub-sectors; (ii) new or expanded livestock agro-businesses; and (iii) expanded and improved livestock service delivery. The estimated aggregate Internal Rate of Return (IRR) is about 27 percent (excluding milk collection centers, MCCs). This is higher than the opportunity cost of capital (estimated at 12 percent), making most of these investments economically viable.

48. While the project hopes to target more value-added activities down the value-chain, such as MCCs, meat/dairy processing, hatcheries, and potentially small-medium sized abattoirs, economic viability becomes more problematic due to the high cost of equipment. This is illustrated by the negative IRR for an MCC where gross incomes are estimated to only marginally cover variable costs and yield an IRR of -11 percent.

49. Benefits to producers and the sector as a whole from disease control would stem from reduced mortality/morbidity rates, increased access to animal traction as an input to the cropping sector, and productivity gains, as measured by milk yields per animal, increased calving rates, and increased weight gains. A very preliminary analysis of the impact of disease control in Zambia implies that improved health services translate into: (i) lower mortalities (between 1 and 5 percent) and calving rates at 60 percent compared to 50 percent over a 3 year period; and (ii) increased live weight of animals of 36 tons and increased milk production of 26,000 litres over 20 years, combined with a reversal of the downward trend in livestock numbers. In addition to the quantifiable benefits, animal disease control is expected to have significant non-quantifiable benefits and multiplier effects beyond the immediate areas of intervention.

B. Technical

50. The project has identified promising livestock supply chains for which the market is supported by the large-scale commercial private sector farms, ensuring a viable scale for the entire value-chain. Through supporting the Progressive Zoning Approach, the project will strengthen the national animal diseases control strategy through more robust Veterinary Services. The project will build on the analytical work conducted by the OIE-PVS pathway, drawing on existing international recommendations for animal disease control investments and national priorities. Infrastructure and animal production technology packages[16] supported by the project will be demand-driven, and draw on technologies readily available, prioritizing those which have already been shown to work in Zambia and neighbouring countries. Matching Grants and subsidies will be used to start the process of livestock intensification among smallholder producers, as well as access to extension and advisory services.

C. Financial Management

51. A financial management assessment of MoAL, the implementing entity, was carried out in accordance with the Financial Management Sector Board Guidelines. The overall financial management residual risk for the project is assessed as Substantial. The details of the project financial management arrangements are included in Annex 3. The Bank will use the Country financial management systems to manage the LDAHP under the MoAL. The assessment concluded that the risk associated with the use of country systems is high. The main risks identified are: (i) possible delays in the flow of funds to the project through the Country's treasury system; (ii) delays in accounting for funds transferred as advances to sub-projects in the provinces and districts; (iii) poor control environment resulting from the lax, non compliance and enforcement of existing financial rules and regulations (including procurement requirements) which may result in Credit funds being used for unintended purposes; (iv) unused funds at the end of the fiscal year being swept back to the Government

[16] Key technology packages and improved husbandry practices include: (i) better herd management including herd registration and note book; (ii) implementation of a herd health plan; (iii) access to improved genetic material including Artificial Insemination; (iv) improved animal feeding (feeding rations, forage and fodder, feeding supplement); and (iv) improved habitat.

treasury making funds unavailable to the project; (v) the existing accounting system, FMS, unable to produce acceptable and timely financial information, inadequate numbers of accounting staff at the provinces and districts to manage project funds; (vi) weak internal audit capacity; and (vii) poor follow up remedial actions to audit findings and non-functional audit committees.

52. A number of risk mitigation measures were considered and are recommended for implementation. These measures include: (i) a customized financial management procedures manual that will provide guidance to staff on all accounting aspects including guidance on ineligible expenditures under the project; (ii) MoAL Internal Audit will benefit from technical assistance provided by cooperating partners under the existing Public Expenditure Management and Financial Accountability (PEMFA) component of the Public Sector Management Program Support Project whose outcomes will include: new audit methodologies/approaches/strategies in line with International Standards for Professional Practice of Internal Auditing; a revised Internal Audit Manual; standardized Internal Audit Working Papers; a Quality Control Manual; and development of a Risk Management Framework for the Public Sector; (iii) financial management control and reporting will be enhanced by the Integrated Financial Management Information System (IFMIS) that has been rolled out to the MoAL at headquarters; (iv) the borrower to assign adequate numbers of qualified and experienced accounting staff to carry out the functions at the Ministry headquarters, provinces and districts; (v) the project will be subject to annual external audit by the Auditor General; (vii) the borrower is committed to ensuring that the funds flow smoothly to the project and has made undertakings to sort out any bottlenecks that may arise promptly; and (viii) the borrower, through the MoAL, will apply to the Secretary to the Treasury at the end of each fiscal year to retain unspent project funds which are at risk of being swept back into the treasury. In addition, the flow of funds will be subject to revision based on the implementation experience of the IDSP, another project being implemented by MoAL that has adopted the use of central treasury to channel funds to the project.

53. Disbursements will not be made from the credit unless the MoAL has: (i) recruited a matching grant specialist; (ii) adopted a Subproject Manual; and (iii) for each respective Subgrant, a Subgrant Agreement has been executed with the recipient of the sub-grants. There will not be any retroactive financing under the project.

D. Procurement

54. A procurement risk assessment of MoAL was conducted in March 2011 using the World Bank's Procurement Risk Assessment Management System (P-RAMS) and the risk has been found to be Substantial. After implementation of the risk mitigation measures, the residual risk rating will change to Moderate. Major risks identified as substantial include: (i) inadequate accountability for procurement decisions and resolution of complaints; (ii) inadequately experienced staff in World Bank procurement procedures; (iii) inadequate procurement planning; and (iv) poor record keeping and documentation management.

55. Proposed mitigation measures include preparation of a procurement manual of the PIM which clearly defines procurement and responsibilities of all players particularly of the

Procurement Unit in MoAL and user departments in line with institutional arrangements and provisions of the Public Procurement Act (Act No 12 of 2008, as amended through Act No 15 of 2011). Staff will receive training provided by the Zambia Public Procurement Authority (ZPPA) to carry out public procurement under the Zambian public procurement law which will apply to National Competitive Bidding (NCB) with exceptions as deemed necessary by the World Bank to exclude provisions which the World Bank finds unacceptable under NCB. It should also include procurement staff training in World Bank procurement procedures, bidding process such as preparation of bidding documents, (pre)qualification, short listing and evaluation criteria and contract management. MoAL will need to institute procurement planning which is realistic in terms of milestones, sequencing and implementation, particularly for works contracts. The project, in its third component, has planned for procurement capacity building at MoAL which will include setting-up rigorous procurement procedures, strengthening the capacities of procurement officers and organizing procurement information and training for various technical units. Some PPF resources have also been allocated for initial procurement training for key staff before project effectiveness.

56. All procurement will be carried out in accordance with applicable procurement (goods, works and non consulting services) and the consultant's guidelines for the project. These are the "Guidelines: "Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 ("Procurement Guidelines") in the case of goods, works and non consulting services and Sections I and IV of the "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011. ("Consultant Guidelines") in the case of consultants' services; as the same shall be elaborated in the procurement plan prepared and updated from time to time by the Recipient for the project in accordance with paragraph 1.18 of the Procurement Guidelines and paragraph 1.25 of the Consultant Guidelines ("Procurement Plan"). The foregoing guidelines will apply in all cases of prior review contracts and all large consulting assignments and large contracts for works and goods which will be subject to prior review by the Bank.

E. Social

57. The potential social impacts of components under the proposed project will be small-scale and site-specific. Women are a key target group and a minimum of 30 percent women beneficiaries should be set as a project target. It is anticipated that project activities will not lead to land acquisition or major restriction of access to sources of livelihood. Project activities will be screened by the environment and social specialist for applicability of OP 4.12 (Involuntary Resettlement), based on the Resettlement Policy Framework (RPF) prepared for the project, which was disclosed in-country and at the InfoShop on December 8, 2011. In the event that people are physically or economically displaced because of the project's activities, a Resettlement Action Plan (RAP) will be prepared in accordance with the requirements of OP4.12, before the commencement of any relocation activities. This plan will be cleared by the Bank, consulted upon, and disclosed. When repercussions are minor (i.e., affected people are not physically displaced and less than 10 percent of their

productive assets are lost) or the number of affected people is less than 200, an Abbreviated Resettlement Action Plan (ARAP) will be prepared.

F. Environment

58. The project has been classified as a category B for environmental assessment and triggers the following environmental safeguards policies: OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP 4.09 (Pest Management), and OP 4.11 (Physical Cultural Resources). The project seeks to improve the productivity of key livestock production systems for targeted smallholder producers in identified areas. Under Component 1, the project will implement the following activities which may have negative impact on the bio-physical environment: (i) strengthen the surveillance, diagnostic and control of animal diseases and scale up vaccinations against major diseases; (ii) improve the capacity to monitor food safety of facilities such as slaughter houses, milk collection centers; (iii) provide laboratory infrastructure improvement, equipment, materials and consumables; and (iv) support the MoAL and Local Authorities to establish or rehabilitate essential livestock infrastructure such as livestock service centers (LSCs), markets, and slaughter houses. Under Component 2, a Livestock Improvement Grant Facility will be created to allow eligible smallholder producers and other livestock industry stakeholders to establish productive livestock investment packages which would include, *inter alia*, (i) essential infrastructure such as milk collection centers, feedlots, grass fodder production methods, etc.; (ii) enhanced genetic merit livestock (e.g., grade dairy cattle, pigs, goats); and (iii) access to improved services such as veterinary, artificial insemination, and Community Livestock/Animal Health Worker training, marketing, and value addition. As there is a risk of potential wildlife/ livestock conflicts in some parts of the project area such as Maala in Namwala district of the Southern province, the project includes measures to minimize such conflicts and help preserve the integrity of critical habitats. The Physical Cultural Resources policy is triggered because in parts of the project target area there are cultural resources or sites having archaeological (prehistoric), paleontological, historical, religious and unique natural values. The project includes measures to identify and protect such resources, including through enforcement of national laws.

59. An assessment of identified potential impacts indicated that negative impacts will be localized during the implementation of the sub-projects, while proper mitigation measures during construction/rehabilitation and/or production would minimize and even eliminate them. Since the actual location of the services and activities to be implemented would not be known by project appraisal, the MoAL 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). As a measure to address a potential increase in the use of pesticides and other veterinary medicines, the Ministry also prepared a Pest Management Plan (PMP) for the project. The ESMF and PMP were disclosed in-country on December 8, 2011 and subsequently disclosed by the Bank's InfoShop on the same date. All future sub-projects will be screened to ensure compliance with triggered safeguards policies. No sub-projects that trigger new safeguards policies will be funded during project implementation. The project will trigger the following Bank safeguard policies:

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[X]	[ ]
Pest Management (OP 4.09)	[X]	[ ]
Indigenous Peoples (OP/BP 4.10)	[ ]	[X]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)*	[ ]	[X]

Annex 1: Results Framework and Monitoring

Project Development Objective (PDO): To improve the productivity of key livestock production systems for targeted female and male smallholder producers in the selected areas of the Recipient's territory.

PDO Level Results Indicators*	Core	Unit of Measure	Baseline[17]	Cumulative Target Values**						Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5	YR6				
Indicator One: Reduction in the prevalence rate in the project areas of: ➢ ND in poultry (village) ➢ CBPP in cattle ➢ FMD in cattle	☐	Percent	60 15 10			50 12 9			40 10 7	Mid-term and end of project	Sero-epidemiological survey and abattoir surveillance for CBPP	CVRI/ NALEIC	Prevalence rate figures refer to Smallholder livestock owners
Indicator Two: Increase in livestock productivity in project areas: ➢ Reduced Hen mortality ➢ Reduced kid (Young goats 0-6 months) : mortality per year ➢ Increased weaned piglets per sow per year ➢ Increased milk per cow per day	☒	Percent Percent Number Litres	40 33 12 6			33 30 14 7			25 25 16 10	Mid-term and end of project Household (HH) survey)	HH survey[18] Milk Collection Center (MCC) survey	MoAL and PCO	Chickens and goats refer to local breeds while pigs and cows refer to crossbreds. Poultry productivity is measured by mortality rate as proxy indicator. Milk data collection targets only existing MCC supported by the project
Indicator Three: Direct project beneficiaries (number), of which female (percentage): ➢ individual livestock owners;	☒	Cumulative Number and *Percent (female)*		10,000 *>30* 10,000 *>30* 260	80,000 *>30* 12,000 *>30* 325	190,000 *>30* 16,000 *>30* 390	200,000 *>30* 18,000 *>30*	300,000 *>30* 20,000 *>30* 520	390,000[19] *>30* 22,000 *>30* 560	Annually	NCO/ PCO annual report	NCO/PCO	Since first year all activity records should keep track of the n° of direct beneficiaries involved by the project

[17] Baseline data is from sero-epidemiological surveys carried out under the IFAD SLIP project and other donor programs, clinical studies carried out by MoAL, MoAL annual reports and household surveys under the Crop Forecasting and Post Harvest Household Surveys.
[18] The Household Survey results should be available before the mid-term and final evaluations.
[19] The project assumes that it will reach out to at least 60 percent of the potential beneficiaries in the project areas.

➢ POs members; ➢ GRZ staff				*>30*	*>30*	*>30*	455 *>30*	*>30*	*>30*				
INTERMEDIATE RESULTS													
Intermediate Result: Livestock Services Provision (Component One): The capacities of the Veterinary Services to survey and control animal diseases and monitor food safety are enhanced													
***Intermediate Result indicator One*:** Vaccination coverage in project risk areas against: ➢ ND in poultry ➢ CBPP in cattle ➢ FMD in cattle	☐	Percent	0 85 70	10 85 70	20 88 80	25 90 80	30 92 85	35 95 90	40 95 95	Annually	Vaccination Reports and Stock Register (Chief Veterinary Office)	Directorate of Veterinary Services-DVS (Chief Veterinary Officer)	Actual figures on vaccination for Newcastle diseases in poultry are marginal.
***Intermediate Result indicator Two*:** Disease Specimen Samples tested in laboratories supported by the project of : ➢ ND ➢ CBPP ➢ FMD	☐	Number per year	63 5,845 3,864	1,050 6,800 4,080	4,400 10,000 8,000	5,400 14,000 12,000	6,200 17,000 16,000	6,200 22,000 22,000	6,200 22,000 24,000	Annually	Lab information data management system	CVRI	Labor. targeted : CVRI in Chilanga Regional laboratories: Chipata, Mongu, Choma, Isoka and Ndola. Number of ND samples collected from 4th year remain fixed as there is no real advantage increasing them.
***Intermediate Result indicator Three*:** Three Food Safety surveillance and monitoring plans are developed and implemented by MoAL, namely: (i) for brucellosis and tuberculosis in Milk Collection Centers; (ii) for antibiotic residues in slaughter houses and meat processing plants; and (iii) for salmonelosis in poultry breeding farms	☐	Cumulative Number	0		1	3	3	3	3	Annually	Surveillance and monitoring reports	Directorate of Veterinary Services – DVS (Principal Veterinary Public Health Officer)	Developed" refers to the approval of the Minister. "Implemented" refers to >10% annual budget utilization
***Intermediate Result indicator Four*:** Smallholder livestock owners satisfied by the quality of veterinary services supported by the project	☒	Percent	0		+10% YR1	+30% YR1	+35% YR1	+40% YR1	+50% YR1	Annually	Location qualitative survey	PCO	Veterinary Services include: (i) Diagnostics and treatment; (ii) Treatment of already diseased animals; (iii) vaccinations; (iv) Advisory and livestock extension

													data disaggregated by gender
***Intermediate Result indicator Five*:** Action plan for genetic resources is developed and implemented		Action Plan			Developed	Implemented				Annually	NCO -annual report	NCO	"Developed" refers to the approval by DLD. "Implemented" refers to >10% annual budget utilization
***Intermediate Result indicator Six*:** Training delivered to MoAL staff: ➢ research training; ➢ veterinary services ➢ animal husbandry		Cumulative Number of client days	0	100 150 200	275 300 450	450 450 850	650 600 1,300	850 750 1,800	1,000 900 2,000	Bi-annually	NCO bi-annual report	NCO and MoAL	Annual figures must be disaggregated by gender
***Intermediate Result indicator Seven*:** Livestock market and production information sent timely from the provinces/districts to the LIMS center		Percent	10	15	25	30	40	50	60	Bi-annually	Livestock market and production monthly report	NALEIC	"Timely" refers to livestock marketing and production information sent by the seventh day the following month
Intermediate Result indicator Eight An independent National Veterinary Council is established and functional		Institution			Established	Functional				Annually	NCO bi-annual report	NCO	"Established" refers to the appointment of the members. "Functional" refers to > 50% member participation in Annual Meeting
Intermediate Result: Productive On-Farm Investments (Component Two): The productivity of identified production systems is improved													
***Intermediate Result indicator One*:** Livestock infrastructure constructed and rehabilitated by the project ➢ Level1 ➢ Level 1+ ➢ Level 2 ➢ Level 3		Cumulative Number	0	0	19 12 5 0	38 23 10 0	57 32 16 1	75 40 22 1	106 51 26 2	Bi-annually	Ministry of Works and Supply and NCO bi-annual reports	Ministry of Works and Supply and NCO	The three infrastructure levels refer to national standard equipped infrastructure[20]. Before MTR a study assessing the utilization and the level of satisfaction by communities would be undertaken
***Intermediate Result indicator Two*:** Smallholder livestock owners adopting at least one project recommended improved animal husbandry practice in project	☒	Cumulative Number	0			27,000			48,000	Mid-term and end of project	HH survey	MoAL district office and PCO	Improved husbandry practices include: (i) better herd management including herd registration (ii)implementation of a herd health plan;

[20] Level 1 refers to crush pen/holding pens, borehole and trough, pit latrine and resting shelter; Level 2 refers to level 1+, plus dip tank/spray race, windmill/solar panel and water reservoir, office and storage, demo facilities, loading bay, and observation terrace, holding pen cattle, shorts/pigs and cages/poultry; and Level 3 refers to level 2 plus classroom, dormitories, kitchen/dinning, laboratory and slaughter facility.

areas													(iii) access to improved genetic material including AI; (iv) improved animal feeding, fodder, feeding supplement and (v) improved habitat
***Intermediate Result indicator Three*:** Utilization rate of the Livestock Improvement Grant Facility recipients that have implemented the project: ➢ 75-100% LIGF utilization ➢ 50-74% LIGF utilization ➢ 0-49% LIGF utilization	☐	Percent	0	0 0 100	10 30 60	15 35 40	25 50 25	40 50 10	60 30 10	Bi-annually	NCO bi-annual report	NCO	Annual figures must be disaggregated by gender of recipients (in case of POs choose gender more represented). Utilization refers to disbursement for the intended purposes
Intermediate Result: Project Management (Component Three): A functioning institutional framework that supports project implementation and monitoring is established.													
***Intermediate Result indicator*:** M/E system established and functional				Established and functional						Bi-annually	Project records	NCO/PCO	"Established" refers to the definition of the methodology for all project indicators. "Functional" refers to > 80% data collection/ analysis of project indicators

***Please indicate whether the indicator is a Core Sector Indicator (see further http://coreindicators)**
****Target values should be entered for the years data will be available, not necessarily annually.**

Annex 2: Detailed Project Description

Project Objectives, Beneficiaries and Outcome Indicators

1. The PDO is to improve the productivity of key livestock production systems for targeted female and male smallholder producers in selected areas of the Recipient's territory. Specifically, the project will 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[21].

2. **Direct Beneficiaries:** Approximately 65 percent of rural households in Zambia (approximately 780,000 households) are reported to raise poultry and 38 percent (approximately 500,000 households) to hold ruminants and pigs. Project beneficiaries will include 390,000 female and male households in the 35 districts of the project's proposed area of Eastern, Southern and Western provinces and the Disease Free Zone comprising Central, Lusaka and parts of Copperbelt provinces. Many of these are members of producer organizations. These provinces comprise a population of approximately 8.9 million people (out of a total population of 13 million) and a cattle and small ruminant population of 1.44 million and 480,000 respectively. The project will specifically target female group members of these organizations. Other direct beneficiaries will include 560 staff members in the MoAL who will receive training using project funds.

3. **Indirect Beneficiaries:** Indirect beneficiaries include the remainder of the 1.1 million farmers who keep livestock not directly targeted by the project. These producers will indirectly benefit from improved control of animal diseases while value chain stakeholders will profit from increased animal supply numbers. On the consumption side, many of the 13 million consumers in Zambia will benefit from better quality livestock products. Other beneficiaries are livestock industry service providers, including private extension agents and veterinarians, sellers of other inputs, including veterinary medicines.

4. The outcome indicators against which the PDO will be measured are: (i) Reduction in the prevalence rate in the project areas of: ND in poultry (percent), CBPP and FMD in cattle (percent); (ii) Increase in livestock productivity in project areas measured by: reduced hen mortality (percent), reduced kid (young goats of 0-6 months) mortality (percent); increased weaned piglets per sow per year (number); increased milk per cow per day (litres); and (iii) Direct project beneficiaries (number), of which female (percentage).

[21] The targeted areas include districts in the Government's priority Disease Free Zone located in Central, Lusaka and parts of Copperbelt provinces. The Government intends to adopt the Progressive Zoning Approach which is the gradual, progressive and sustained intensification of veterinary services provision (e.g., surveillance, control, laboratory services, district by district, in key livestock producing areas).

Project Concept and Approach

5. The project is designed to support the Government's efforts to: (i) improve productivity of key production systems (see Box 1), namely meat and milk from cattle and small ruminants, poultry and pig sectors; (ii) strengthen veterinary services (public and private) to better control major animal diseases and improve food safety; and (iii) address other identified constraints to productivity improvements by supporting productive investments (infrastructure, equipment, and technologies) and improving access to advisory and extension services for producers and their organizations. The project will prioritize the introduction of technologies that reduce livestock mortality particularly in young stock, and improve reproductive efficiency and enable animals to quickly reach optimum slaughter weight. This will directly lead to productivity improvements in the smallholder livestock sector.

6. In addition, the project will support rehabilitation of animal production and veterinary services through provision of equipment, rehabilitation or construction of critical public and community infrastructure, and skills training of front-line animal production and veterinary staff. The project will also improve producers' access to services by encouraging formation of groups, providing essential livestock infrastructure, and delivery of improved technology packages by Ministry field staff augmented by Community Livestock/Animal Health Workers and private service providers. The project will support institutional capacity strengthening through logistical support and training focused at both academic and skills training for public national institutions as well as support for producer organizations at national level.

Box 1 – Production Systems to be Supported by LDAHP:

For the ruminants species (cattle, goats, and sheep) the project will support the four main types of production systems as described in the Seré and Steinfeld classification, namely grassland based, rainfed mixed farming, irrigated mixed farming and landless, but excluding the large commercial sector.

In the poultry sector, the production systems to be supported are:

- Small scale:
  Broilers: local or improved breeds – 50 to 500
  Layers: improved breeds – 50 to 100
- Emerging: improved husbandry practices, access to services, linked to market
  Broilers: improved breeds – 500 to 1,000
  Layers: improved breeds – 100 to 1000

In the pigs sector, the production systems to be supported are:

- Small scale: with housing (not scavenging) no specialization (1 to 5 sows – producing 5 fattened pigs per sow per batch)
- Emerging: better husbandry practices, beginning of specialization (breeders, piglets producers, fatteners) – 5 to 10 sows – 8 fattened pigs per sow per batch (1.5 batches per year) - access to services and linked to market

7. Targeted support will cover the major animal rearing provinces including, Eastern, Southern and Western provinces. The designated Disease Free Zone area which includes Central and Lusaka provinces as well as the two districts of Copperbelt province will be covered.

Livestock Service Centers

8. The project is supporting the Government's three pronged strategy which revolves around the provision of effective extension service delivery, prevention and control of livestock diseases and marketing of livestock and livestock products. The Government has developed the concept of Livestock Service Center (LSC) which is a one-stop facility for providing extension and advisory services to farmers at the local level. The LSC is based on the old system of service provision through veterinary camps. The infrastructure at the LSCs will, depending on location, include crush pens, for ease of handling livestock to facilitate the execution of animal husbandry activities such as castrations, sampling and vaccinations; plunge dip-tanks/spray races for tick control; marketing facilities; staff accommodation for extension officers; and facilities for residential training of farmers in best management practices. The justification for LSC is based on the absence of livestock handling facilities in the communal areas which could facilitate the provision of services to the livestock farmers.

9. **The Services Offered to farmers at LSCs will include:**

(a) Artificial Insemination, dipping or spraying;
(b) Extension service delivery;
(c) Vaccinations/Immunization;
(d) Training of livestock farmers through demonstrations of better livestock management practices of all livestock species (cattle, sheep and goats, pigs and poultry) on breeding, feeding and pastures/range management, housing, disease control, branding, castration, record keeping and planning for improvement;
(e) Livestock marketing and trade – Will create an enabling environment for both livestock farmers and traders to come together and bargain for fair prices for livestock;
(f) Other services such as castration, de-horning, dipping and spraying and branding/animal identification.

10. Depending on the services being offered, LSCs will be in three different levels or tiers. However, regardless of the tiers, farmers will be required to trek their animals to the LSCs on selected days in order for them to access the various livestock services. Tier 1+, tier 2, and tier 3 are additions to infrastructure already provided at lower levels.

Table A2.1: Types of Infrastructure to be Financed by the Project

Tier 1	Tier 2	Tier 3
Crush pen and holding pen; Borehole and trough; Ventilated pit latrine; Farmers Resting shed.		
Tier 1+ Plunge dip tank/spray race; Windmill/Solar panel; Water Reservoir.		
	Staff Housing; Office and Storage; Demonstration facilities and a classroom (40 people each); Loading Bay; Observation Terrace; Holding Pens Cattle; Shorts/Pigs; Cages Poultry.	
		Class room; Dormitories; Kitchen/Dining; Cottage Industry Lab; Slaughter Facility.

Management of LSC

11. Although the cost of establishing LSCs will be funded by the public sector after a demonstrated needs assessment, day-to-day management will be out-sourced to NGOs or private service providers who will recover their operational and maintenance costs from the farmers. The MoAL will provide oversight and avail its extension staff to offer technical advice, community awareness and group formation. The local community, through their local leadership, will be encouraged to form LSCs. These committees will be actively involved in identifying LSC sites, selecting designated market locations and days, and involved in their construction through in-kind contributions such as providing crushed stones, building sand and labor. Chiefs, indunas[22], village headmen, and relevant stakeholders as well as the local community will be adequately sensitized about the LSCs.

Project Components

12. The project will have three components: (i) Livestock Services Provision; (ii) Productive On-Farm Investments; and (iii) Project Management. The project is expected to be implemented over a six year period.

Component 1: Livestock Services Provision. The objectives of the component are to: (i) strengthen the zoonotic and contagious animal diseases surveillance and control systems including laboratory diagnostic capacities; (ii) build institutional capacity within the MoAL

[22] Indunas are advisors to the chief.

to improve service delivery and rehabilitate or construct essential public livestock industry infrastructure; and (iii) improve the capacity to monitor food safety conditions in facilities (slaughterhouses, milk collection centers, etc.) in the targeted project areas. This component will support the strengthening of the Veterinary Services, as defined by the World Organization for Animal Health (OIE), which focuses the tripod, "public veterinary system, private veterinary network and producers". It will build on the evaluation of the performance of the Veterinary Services using the PVS Tool carried out in July 2008 by the OIE and the subsequent Gap Analysis conducted recently where national priorities are defined.

13. Major issues highlighted in these analytical documents on the state of the veterinary system are: (i) the lack of capacity to early detect, diagnose and rapidly respond to suspicions of contagious animal disease outbreaks due to an insufficient network of animal health professionals (quantity and quality) in the rural areas, both from public and private sectors. Weak control of imported animals and animal products (Borders Inspection Posts) was also identified; and (ii) poor food safety control capacities such as meat inspection which is part of the Ministry of Health's mandate in accordance with the Food and Drugs Act. Addressing issues of improving animal health in order to increase productivity of the livestock sector and enhancing food safety capacities are critical. LDAHP will support capacity strengthening of key public institutions of the livestock sector with the specific objective of: (i) improving delivery of advisory and technical services to enhance the adoption of good husbandry practices and innovative technologies; and (ii) promoting development of an appropriate framework for sustainability of the livestock sector. The project will aim to strengthen staff capacity within MoAL to assist in carrying out its core public responsibilities including sector planning, monitoring and evaluation and enhance its collaboration with other Ministries such as Finance and National Planning, Local Government, and Health.

14. The component will build on lessons emerging from animal disease control under the IFAD SLIP which show that high vaccination coverage of 90 percent (two vaccinations of CBPP) is achievable as evidenced in the Western and North Western Provinces. LDAHP will build on this success with sero-monitoring and financing additional vaccination campaigns. With regard to the control of ECF, calf immunization is increasingly the preferred technology demonstrating significant reductions in calf mortality of about 10-20 percent. Under SLIP, the project has revealed high farmer demand for calf immunization with farmers willing to contribute to the cost of immunization. SLIP's target of immunizing 875,000 calves mainly in Southern, Eastern and Central Provinces may not be achievable in the project period due to inadequate supply of stabilate. This constraint is due to the inability by the Lilongwe Vaccine Center[23] in Malawi to supply adequate quantities of stabilate to the SADC region. The problem is so severe that SLIP has been assisting the CVRI in Lusaka to augment the Lilongwe supply. A cost/benefit analysis to build up to 50,000 doses pa is now being carried out and LDAHP should build on this program. This component will have the following sub-components:

15. ***Sub-Component 1.1: Strengthening the Surveillance, Diagnostic and Control of Animal Diseases***: This sub-component will support the strengthening of passive and active surveillance systems for zoonotic and major contagious animal diseases and it will scale-up

[23] The Lilongwe Vaccine Center has been tasked by SADC with responsibility for supplying stabilate to the region.

vaccination of major diseases. The sub-component will 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 will be on major identified diseases of economic importance including FMD, CBPP, ECF, ND and ASF. However, flexibility will be allowed to accommodate other specific needs such as: (i) the emergence of new diseases that can strongly affect productivity of a targeted species (e.g., *Peste des Petists Ruminants* (PPR) in small ruminants already present in neighboring countries); (ii) diseases affecting productivity in specific geographical areas (e.g., trypanosomiasis in cattle); or (iii) zoonotic diseases affecting the species targeted by the project (e.g., brucellosis).

16. In anticipation of higher demand for livestock services by construction of the proposed LSCs, a network of Community Livestock/Animal Health Workers will be established as first call service providers to producer groups in the chain of animal health services provision. Approximately 150 Community Livestock/Animal Health Workers will be trained and equipped to provide essential livestock services to smallholder livestock producers. Once trained, these Workers will be equipped with basic supplies including a bicycle and they will become affiliated with a specific LSC which will serve as aggregation points for the provision of disease control services, input supply services and extension provision or selected Tier I centers which are located in more rural areas. The Community Livestock/Animal Health Workers will, under the guidance of a responsible public or mandated private veterinarian, provide livestock services to interested livestock owners and generate a commission fee for these services. The criteria for eligibility would include: (i) strong community endorsement; (ii) a history of community engagement; (iii) literacy; and (iv) performance during training. The guidelines and training for selecting Community Livestock/Animal Health Workers should be reviewed, using best practices and training manuals drawn from local NGOs who have been engaged in their training in Zambia.

17. The project will provide short-term training (outbreak investigation and disease reporting), logistic support and equipment to decentralized Veterinary offices (Provincial and District Veterinary Camps), as well as develop and facilitate mechanisms for establishment of private veterinarians in rural areas such as training in entrepreneurship, authorization to sell veterinary drugs or involvement in vaccination campaigns through the sanitary mandate. The project will provide start-up support for two years for the establishment and operation of a Secretariat of an independent Veterinary Council, as recommended by the OIE standards for good quality of Veterinary Services. The Veterinary Council is already provided for under the Veterinary and Para-Veterinary legislation. This Statutory Body will regulate the veterinary profession and consolidate the link between public and private veterinary service. To support service delivery by private veterinarians, the project will provide a grant to the Veterinary Council to offer internships to approximately 5-10 newly graduated veterinary students who would work with established veterinarians in a particular district covered by the project[24] where livestock Tier II centers have been established.

18. The sub-component will also support MoAL to strengthen its mandate to control imported animals and products from neighboring countries by building the capacities of the

[24] Eastern, Southern, Western, Central, Copperbelt and Lusaka provinces.

nine established Border Inspection Posts (BIPs) through renovation, equipment and specific training.

19. This sub-component will also support capacity building of laboratory diagnosis**.** Based on the recommendations of a pre-conducted needs assessment and gap analysis to develop a national laboratory network plan, the sub-component will: (i) support improvements to laboratory infrastructure; (ii) provide equipment, material and consumables; (iii) fund training of laboratory staff; and (iv) develop and implement a quality management system, a prerequisite for accreditation. Implementation of activities (i) and (ii) will be coordinated by MoAL in close collaboration with other partners such as COMESA which designated the Center for Veterinary Research Institute (CVRI – national laboratory), as the future sub-regional Reference Laboratory for animal diseases.

20. ***Sub-Component 1.2: Support for Livestock Infrastructure and Access to Services.*** This activity will provide support to the MoAL and local councils to establish or rehabilitate essential livestock industry infrastructure (e.g., LSCs Tier 1 and 2[25], small peri-urban markets and slaughter slab facilities, etc.) in agreed locations after a full Infrastructure Inventory and Needs Assessment has established that there is a clear need or public good requirement which is not being met by private sector investment. Management of such publically-owned infrastructure would be handled by a contractual arrangement with the private sector where appropriate. Selection of investments to be supported under this activity would be coordinated with those being implemented by other donors and projects. Pre-requisites for establishment/rehabilitation of infrastructure to be supported by the project would include private sector management experience, a feasibility study and a five year business plan demonstrating financial viability, results and sustainable impact.

21. ***Sub-Component 1.3: Institutional Support to MoAL.*** The sub-component would aim to reinforce *capacities of public administration* to perform key core functions including extension and advisory services, sector monitoring and evaluation, sector analysis and policy preparation and implementation. The sub-component would complement the support provided by the first sub-component. Activities will include conducting a comprehensive needs assessment and gap analysis to determine the supply and demand of livestock services in order to guide MoAL's review of job descriptions, identify gaps where training needs and specialized human resources are needed, and prepare a comprehensive training plan. The sub-component will support implementation of the training plan through: (a) a M.Sc. upgrade program designed to target MoAL staff as well as staff from training institutions supported by the project (i.e., ZIAH and PDTI) who hold a first degree and wish to attain a Masters' degree; (b) a diploma upgrade program which will target veterinary/livestock assistants at district level who hold a certificate and wish to upgrade their certificate through a one year training in animal production; (c) a distance learning program that will target staff who

[25] The MoAL plans to establish Livestock Service Centers (Tier 1, 2 and 3), and other essential livestock industry infrastructure (markets, slaughter facilities, etc.) in agreed locations. Tier 1 LSC will have crush pens, holding pens, dip tanks, water troughs. These will follow the existing or designated veterinary camps. These currently number 1,024. Tier 2 will have all of Tier 1infrastructure plus Camp house, weighing scale, office store room, loading and off loading bay and a market center. 304 are planned. Tier 3 will have all of tier two and a livestock training center, including demonstration structures e.g., pasture, bio gas and slaughter facility.

would like to specialize in a specific area such as business management, administration and finance; and (d) in-service technical and methodological trainings (adult training methodology such as the Farmer Field School) that will target staff at district and camp levels. Preparation of the comprehensive training program will be a pre-requisite for the implementation of the training activities. All training activities will target disciplines where major gaps have been already identified[26] (or will be identified by the above mentioned needs assessment).

22. Under the sub-component, the project will also: (i) finance vehicles and office equipment to improve efficient delivery of advisory and technical services to farmers; and (ii) assist the ZIAH and PDTI to: (a) carry out, together with the private sector, a study to identify human resources needed for future private and public engagement in the livestock sector; (b) prepare and finance the implementation of an investment plan designed to upgrade the training curriculum from its current 2-year animal health certificate to a 3-year diploma in animal health and animal production; and (iii) assist in developing and implementing a sector M&E system which would include the roll out of the LIMS and improve analytical capacities to analyze sector data, including the funding of a national disease information system.

23. Project support will also be provided to design and implement a farm and/or animal identification and traceability system. This will be done in collaboration with the private sector. An international consultancy, together with major stakeholders such as the ZNFU or the Herd Book Society, will provide technical assistance to MoAL to help design and establish this identification system. Consultancy services to assist with the design of the system and provide operating funds for implementation start-up will be financed by the project in pilot areas focusing on specific productive animals (breeding, dairy) or farms (pigs, poultry).

24. The project will contribute to capacity strengthening of MoAL in the areas of policy analysis and regulatory reform. Implementation of this activity will be delivered through training and consultancy services. Specifically, the sub-component will support the preparation of a livestock marketing strategy aimed at improving market access of smallholder farmers. In addition, the project will support the preparation, in collaboration with MoH and key stakeholders, of a Veterinary Public Health Act by assisting in reviewing current legislation and promoting policy dialogue with key stakeholders.

25. The quality, availability and rational management of Animal Genetic Resources (AGR) are critical factors constraining on-farm productivity. The project will provide specific support to increasing the availability of improved breeds to small-scale farmers. First, the project will assist MoAL to develop and adopt a breeding strategy, supported by a budgeted investment plan for sustainable management of the country's animal genetic resources [27]. The strategy will identify the most appropriate breeds for each production system, develop straight and cross breeding programs and define the role of the public and private sector in

[26] (i) livestock production (including animal breeding/genetic (including DNA analysis), animal nutrition, range/pasture management); (ii) diagnosis capacities; (iii) policy analysis; and (iv) food safety.

[27] See guidelines for Breeding Strategies for Sustainable Management of Animal Genetic Resources at http://www.fao.org/docrep/012/i1103e/i1103e00.htm.

AGR improvement and preservation. The project will additionally assist the National Artificial Insemination Center (NAIC) to contribute to the implementation of the investment plan prepared. To ensure on-farm impact, the project will also promote the development of artificial insemination through (a) providing support to the NAIC to conduct new training and refresher courses to AI technicians in milk cooperatives (Milk Collection Center); (b) extending its outreach by providing insemination services to the private sector; and (c) supporting the scaling-up of existing successful initiatives aimed at providing private-led sustainable artificial insemination services in milk cooperatives. Finally the project will stimulate increased availability of pig genetics by providing technical and investment support to a specialized Breeding Center (BC) with a track record of increasing the availability of breeding animals, such as the Keembe Piggery. Demonstrated interaction and engagement with private breeders in the orientation and management of the BC and transparent financial management with regular control will be pre-requisites for support of the BC.

26. The sub-component will further assist the MoAL in strengthening collaboration with the MoH and ZABS to set up national hygienic standards based on the Food and Drugs Act in order to regulate facilities such as slaughterhouses and facilitate the official adoption of existing ones such as dairy standards. It will then support the MoAL and the MoH to implement and enforce them by organizing joint training and public awareness campaign for the private sector (farmers, processors, transporters, traders) and inspectors on standards implementation and enforcement. A good food safety system needs regular monitoring of substances and food-borne diseases in human-consumed products. The sub-component will also support both MoAL and MoH to develop and implement joint surveillance plans to monitor residues, Brucellosis, Salmonellosis, etc., and to control veterinary drugs distribution in collaboration with the private sector.

27. Finally, the sub-component will support the preparation of detailed implementation guidelines for the EADCF which has been established at the national level by the "Animal Health Act" and provide financing (US$100,000) towards this work. Some operating funds planned under this sub-component could be reallocated to this Emergency Fund in the future if the need arises in order to quickly respond to an outbreak and compensate farmers in case of animal culling. Disbursement of this Fund will be contingent upon the preparation of a detailed operating and procedures module describing the technical criteria for Fund eligibility (e.g., type of diseases, farmers, specified conditions) and administrative, financial management, procurement and accountability requirements agreeable to the Bank.

28. **Component 2: Productive On-Farm Investments.** The objective of this component is to improve the productivity of identified production systems through support to investments targeting producers and their organizations, but also to private service providers. In the traditional sector, the priority would be to introduce technologies that reduce livestock mortality particularly in young stock, improve reproductive efficiency and enable animals to reach optimum slaughter weight more quickly. Producers' access to services would be improved through group formation, provision of essential livestock infrastructure, and delivery of improved technology packages by Ministry field staff augmented by Community Livestock/Animal Health Workers and private service providers. A special grant window will be established to provide support for improving pasture management, developing forage

crops and conservation/feeding technologies. These activities will aim to increase livestock feed availability during the dry season. See Table A2.2 which outlines the grant windows and eligibility criteria.

29. The project will finance investment costs associated with approved works, goods and services (consulting and non-consulting) of the approved sub-projects. The project will follow the Bank's guidelines for eligible and ineligible expenditures at the sub-project level. The project will finance incremental costs associated with the sub-project including additional specialized staff specifically hired for the sub-project. The project will not finance salaries or overheads of the promoter of the sub-project except those associated with the subproject. No staff housing will be considered under the subproject. Limited operational costs will be based on the Bank's definition of eligible operating expenses and could include, *inter alia*: communication costs, vehicle operating expenses, banking charges, specialized staff costs, M&E related costs at the sub-project level.

30. Disbursement of all types of grants will be based on a tranche basis. First disbursement of the grant will be triggered by confirmation of the grant recipient's contribution. Second disbursement will be based on evidence of use of first tranche. Subsequent disbursements will be treated in a similar manner. A timetable will be agreed for disbursement of funds. Sub-project reports will be expected at agreed intervals and evaluated by the Funds Manager in the PCO. The MoAL will carry out random audits of sub-projects and provide feedback to the Funds Manager. This will be in addition to the M&E which the Fund Manager will carry out to verify inventory, record keeping etc.

31. ***Sub-Component 2.1: Support for the Livestock Improvement Grant Facility:*** A Livestock Improvement Grant Facility (LIGF) will be established and accessed by eligible smallholder producers in groups or cooperatives as well as by other livestock industry stakeholders to finance productive livestock investment packages. This matching grant facility was included in the project based on indications that market failures limit credit access to small-scale emerging farmers who are willing to invest some of their own capital in productive on-farm investments in livestock. In addition, the grants provide a unique opportunity to support and incentivize access to privately provided technical services. Investment packages may include *inter alia* essential infrastructure (e.g., communal cattle handling facilities, MCCs, feedlots etc.), enhanced genetic merit livestock (e.g., grade dairy cattle, pigs, goats), accessing improved services (e.g., veterinary, AI, Community Livestock/Animal Health Worker training) and marketing and value adding activities. Investment packages would include both capital cost and limited operational cost support (1 year of operational cost). Technical assistance to mentor successful implementation of sub-projects and provide a comprehensive training program would also be included. Recipients would be expected to contribute at least 25 percent of the investment costs in cash or kind (e.g., building materials). In addition to the 25 percent contribution, eligibility criteria for sub-projects would include: (i) demand-driven proposals; (ii) only groups in project areas (i.e., required to show evidence as a registered group/association with a bank account); (iii) degree of measurable impact; (iv) feasibility and sustainability through a 5 years business plan; and (v) provision of technical assistance which would be budgeted in the proposal. In prioritizing proposals, preference will be given to projects showing the highest degree of

impact, significant linkages/benefits to smallholder producers and with an emphasis on contribution to the PDO.

32. Eligible applicants would initially submit a simple Project Concept Note to the MoAL District Office for comment and onward transmission to a Provincial level Grant Committee. If the proposed project meets the LIGF eligibility criteria, the applicant would be linked to a pre-selected and trained specialist to assist in the detailed preparation of a Business and Financial Plan for the proposed investment package. This specialist would be paid directly by the LIGF on the basis of the complexity of the project and submission of an acceptable investment plan. Following successful appraisal for technical soundness (e.g., by a MoAL, ZNFU, DAZ, PAZ Subject Matter Specialist) as well as financial viability and legal compliance, the project would be implemented. A mechanism would be built into the funding contract to ensure that the assets funded by the LIGF could be recovered and redeployed in the event of management failure.

33. Farmers who require access to more specialized farm management and business planning advisory services in addition to access to credit for on-farm investments would be provided with technical assistance to enhance agri-business and technical farming skills and prepare investment packages for submission to other credit agencies for funding.

34. ***Sub-Component 2.2: Pasture Management and Forage Development:*** Improving range productivity and on-farm establishment and utilization of pastures, including legumes, is urgently required. The project will offer small grants through a pasture management and forage development grant to be established under Component 2. The main objective of this activity will be to increase feed availability during dry season by introducing appropriate techniques and technologies that have been successfully proven, such as participatory rangeland management, handling, storage, utilization and physical/chemical treatments of crop residues / hay including silage making, introduction of multipurpose fodder shrubs, grasses and legumes, forage multiplication, preparation of multi-nutrient feed blocks, strategic supplementation, hedge rows of leguminous trees and shrubs, under-sowing, cover cropping with forage legumes under tree crops, contour forage strips, establishment of mixed grass-legume pastures for utilisation by controlled grazing, over-sowing of grazing land with robust legumes, stock exclusion areas. Adoption of grass/fodder production methods by farmers would be facilitated under this sub-component and linkages with other WB-funded agricultural projects such as ADSP and IDSP that could support such activities would be explored. The grants will be eligible to all non-public institutions (NGOs, training institutions, producers' organizations). Through an awareness campaign, the project will call for proposals which will be evaluated by an appropriately competent team of experts. Eligibility criteria will be detailed in the PIM.

35. ***Sub-Component 2.3: Strengthening Capacities of Non-Public Service Providers:*** The sub-component will aim to increase representation and services provided to smallholder producers in key national livestock organizations by reinforcing advisory, advocacy and information services. Five organizations will be eligible to receive support under the project: PAZ, DAZ, Beef/Cattle Association, Pig Commodity Committee of the ZNFU; and the Herd

Book Society of Zambia. Activities[28] will aim to increase membership of smallholder producers and through targeted delivery of services. Activities will be selected following a transparent and competitive process on the basis of a detailed development plan and implemented on a cost-share basis. The PIM will define the process, conditions and eligibility criteria to access support. As for the pasture grants, it is anticipated that a competent team of experts will evaluate the non-public service providers' proposals while the project's TC will recommend for approval. Producer associations matching contribution will be 25 percent except for associations benefiting from a levy in the value chain (i.e., DAZ and PAZ) for which their contributions will be 50 percent.

36. **Component 3: Project Management.** The objective of this component will be to ensure efficient and timely delivery of resources in accordance with the project's objectives. The sub-component will finance operational costs of the national PSC and TC responsible for project oversight and policy guidance. In addition, the project will support the establishment of PCOs at national and provincial levels as they will be responsible for project implementation, procurement, financial management, safeguards monitoring and M&E. Technical assistance, training, office equipment and vehicles, minor office upgrading works and incremental operating costs in support of project management will be financed. The project will operationalize an M&E system which will include a GIS to spatially monitor, report and display results as well as regular evaluation studies. The component will also finance independent financial and technical audits and a project evaluation. A communications strategy will also be implemented under the project.

[28] Examples of possible activities include: (i) formation and consolidation of smallscale farmer groups at district level; (ii) collection and dissemination of technical, commercial and marketing information to target groups including the promotion of innovations; (iii) participation of smallscale and emergent farmers in advocacy and policy dialogue.

Table A2.2: Productive Investments (Government and private): Key Factors

	Livestock Service Centers	Matching Grants	Grants for Pasture/Forage	Grants for Producer Organizations
Budget:	$8.44 million for LSC[29] (Tier 1, Tier 2, Tier 3): LSC 1: 106, LSC 1+: 51, LSC 2: 26, LSC 3: 2	Grant envelope of $14.69 million[30] includes cost of grant support mechanisms, technical training, etc..	$2.20 million[31]	$1.26 million[32].
Coordinating Body	▸ Government for all LSCs except those constructed under matching grant, in which criteria are the same as for matching grant. ▸ There should be livestock service center committee (linked to focal point on matching grant in districts) for selection.	▸ Matching grant coordinator (in project), along with grants committees in provinces. ▸ Team should aim for matching grant turnaround of 6-12 weeks (similar to that established by Africare). ▸ Adhoc technical review panel appointed when needed.	▸ Screened by PC and full review of proposal by the Technical Committee of the project. Public sector to play oversight role including at decentralized level.	Screened by PC and full review of proposal by the Technical Committee of the project. Public sector to play oversight role including at decentralized level.
Eligibility criteria	▸ Open only to groups in project areas (i.e., need to be a registered group/association with a bank account). ▸ Consideration for investing in LSC needs to include a request from local communities. ▸ Contributes to improving livestock productivity for beneficiaries ▸ Needs to have a IRR greater than 12% ▸ Groups must comprise small farmers	▸ Open only to groups in project areas (i.e., need to be a registered group/association with a bank account). ▸ Favor projects which include new graduates (youth focus) or gender focus.	▸ All institutions[33] including NGOs, training institution but excluding public institutions., ▸ Institutions with 5 years experience OR demonstrated capacity in Range/Pasture Mgt	▸ The following five organizations will be eligible to receive support: the Poultry Association of Zambia (PAZ), the Dairy Association of Zambia (DAZ), the Beef/Cattle Association and the

[29] The MoAL plans to establish Livestock Service Centers (LSCs) (Tier 1, 2 and 3), and other essential livestock industry infrastructure (markets, slaughter facilities, etc.) in agreed locations, among the current veterinary camps which now number 1,024, where no such infrastructure currently exist. Tier 1 LSCs could include crush pens, holding pens, dip tanks, water troughs. Tier 2 could include Tier 1infrastructure plus a Camp house, weighing scale, office store room, loading and off loading bay and a market center. Tier 3 are proposed to supplement Tier 2 infrastructure with a livestock training center, possibly including demonstration structures e.g. pasture, biogas and slaughter facility.

[30] IDA allocation for matching grants.

[31] IDA allocation for pasture/forage grants.

[32] IDA allocation for grants to producer organizations.

[33] Parastatal institutions are eligible.

	▸ Groups have 30% female members.		& fodder/forage crops ▸ Past successes with small scale farmers ▸ Qualifications/CVs of operators ▸ Recipients would be expected to contribute at least 25 percent of the investment costs in cash or kind (e.g., building materials). ▸ Grant to leverage ongoing activities;	Pig Commodity Committee of the Zambian National Farmers Union (ZNFU) and the Herd Book Society of Zambia. ▸ Activities would be implemented on a cost-sharing basis and identified after a transparent and competitive process on the basis of a detailed development plan to be prepared by each of the targeted organizations with the support of the project.
Other considerations:	▸ Based on independent needs assessment taking into account, # of livestock in a camp/district, number of households with livestock, demand for livestock services, disease incidence, and gap analysis. Proposal must fill a gap. ▸ Transparent process. ▸ Project should develop a manual on site selection and model of LSC management ▸ This manual could lay out a sliding scoring/rating system which guides selection. ▸ A livestock service center committee (linked to focal point on matching grant in districts) for selection. ▸ All investment should be supported by fee-based services, whenever possible. ▸ Access to water for all infrastructure ▸ Access to a road for Tier II. ▸ No competition with private sector in areas where private sector is already providing	▸ Ceilings for on-farm activities should be limited to US$20,000 with higher grant ceilings available for agro-industry proposals (such as Milk Collection Centers). These types of activities should have a possible maximum limit of US$50,000, with required impact assessments showing significant linkages/benefits to smallholder producers. ▸ Business plan with a minimum (25%) cost sharing (in cost or in kind for producer groups).	▸ Ceiling amount of US$50,000-renewable (Grant recipients would be eligible for larger grant upon demonstrated initial successful impact). ▸ Part of cost needs to include impact evaluation. ▸ Grant recipient providing direct support to small-scale farmers ▸ Investment packages would include both capital cost as well as limited operational cost support. ▸ Technical assistance to mentor the successful	▸ Proposals will have to show clear and precise performance and impact indicators with direct contribution to meeting the PDO ▸ A proposal ceiling of $100 000 (renewable in case of proven successful implementation) ▸ Cost sharing of the producers associations will be 25% except for associations already benefiting from a levy in the value chain (DAZ and PAZ) for which the matching

	services. ▸ Proposal must be environmentally compliant. ▸ Stakeholders at selected sites need to develop a baseline ('real time data collection") which includes indicators allowing an impact assessment of project interventions.	▸ Demand-driven proposals; ▸ Based on degree/demonstration of measurable impact; ▸ Business plan with cost sharing (minimum (25 %) – (in cash or in kind); ▸ Provision of technical assistance needs is costed in the project proposal. ▸ Grants cover good, services, operational costs (including overhead). Suggestion that investment in agri-business operations only be given to existing businesses/cooperatives.	implementation of the sub-projects, as well as a comprehensive training program would also be included.	contribution would be 50%.
Examples of types of grants	See footnote 29 above.	**On Farm** ▸ Boiler and Layer (50 – 1000) ▸ Pig breeding and fattening (1 – 10 sows) ▸ Beef / goats production ▸ Dairy production ▸ Procurement of bulls **Livestock enterprises** ▸ Milk collection Centers ▸ Milk processing ▸ Meat processing ▸ Hatcheries **Improved services delivery** ▸ Private veterinary and AI services ▸ LSC Tier 1	▸ Practical range improvement measures, on-farm adaptive research, innovative extension and demonstration packages, and improved dry season utilisation of crop residues. ▸ Adoption of grass/fodder production methods used by farmers will also be facilitated by the LIGF.	▸

Table A2.3: Financing sources by components

US$ Million	Government Amount	%	Beneficiary Amount	%	IDA Amount	%	Total	%
Component 1: Livestock Services Provision								
Sub-Component 1.1: Surveillance and disease control	1.86	16	--	--	9.89	84	11.75	18
Sub-Component 1.2: Support for Livestock Infrastructure and Access to Services	4.60	35	--	--	8.44	65	13.04	20
Sub-Component 1.3: Institutional Support for MoAL	1.17	14	--	--	7.12	86	8.29	13
Subtotal Component 1: Livestock Services Provision	**7.63**	**23**	**--**	**--**	**25.45**	**77**	**33.08**	**51**
Component 2: Productive On-Farm Investments								
Sub-Component 2.1: Livestock Improvement Grant Facility	0.05	0.3	4.33	23	14.69	77	19.07	29
Sub-Component 2.2: Pasture Management and Forage Development	0.03	1	--	--	2.20	99	2.23	3
Sub-Component 2.3: Strengthening Capacities of Non-Public Service Providers	0.03	2	0.53	29	1.26	69	1.82	3
Subtotal Component 2: Productive On-Farm Investments	**0.11**	**0.5**	**4.86**	**21**	**18.15**	**79**	**23.12**	**36**
Component 3: Project Management	**2.15**	**29**	**--**	**--**	**5.40**	**72**	**7.55**	**12**
Component Total	**9.89**	**16**	**4.86**	**8**	**49.00**	**77**	**63.75**	**98**
Reimbursement Project Preparation Facility (PPF)	--		--	--	1.00	100	1	2
TOTAL PROJECT COSTS	**9.89**	**15**	**4.86**	**8**	**50.00**	**77**	**64.75**	**100**

Table A2.4: Financing Sources by Disbursement Category

US $ Million	Government Amount	%	Beneficiary Amount	%	IDA Amount	%	Total	%
1. Goods	2.48	22	0.00	0	8.84	78	11.32	17
2. Civil Works	4.73	37	0.00	0	7.90	63	12.63	20
3. Consultant and non-Consultant Services	0.45	5	0.00	0	8.12	95	8.57	13
4. Training, Workshops, Meetings	0.00	0	0.00	0	3.10	100	3.10	5
5. Emergency Disease Control	0.00	0	0.00	0	0.10	100	0.10	0.2
6. Grants	0.00	0	4.86	23	16.17	77	21.03	32
7. Operating Costs	2.23	32	0.00	0	4.77	68	7.00	11
8. Refund of Project Preparation Advance	0.00	0	0.00	0	1.00	100	1.00	2
TOTAL PROJECT COSTS	9.89	15	4.86	8	50.00	77	64.75	100

Annex 3: Implementation Arrangements

Project Administration Mechanism

1. The project will be housed in the Ministry of Agriculture and Livestock (MoAL) which will have overall responsibility for project implementation. A Project Steering Committee assisted by a Technical Committee will provide policy guidance and oversee performance. Within the Ministry, a Project Coordination Office (PCO) headed by a National Project Coordinator (NPC) will be established to ensure overall management and coordination of the project. The PCO will be the lead project implementation agency. At provincial levels, coordination will be carried out by five Provincial Project Coordination Offices (PPCOs). Both PCO and PPCOs will comprise: (i) civil servants from the public administration to be assigned to the project on a full time basis; and (ii) contracted staff in specific technical areas to fill gaps in the Ministry's establishment. Additional implementation support will be provided through: (i) provincial and district extension structures of the MoAL to strengthen links with, and support to, the producers, and participate in sub-projects pre-screening and selection; (ii) local service providers to assist farmer groups in detailing their sub-projects; (iii) Grant Committees (GCs) and technical specialists to evaluate sub-projects and ensure final quality and selection; and (iv) specific implementation agreements for activities under the overall oversight of the PCO. An organogram outlining implementation arrangements is presented in Figure A3.1.

2. A Project Implementation Manual (PIM) will be prepared before project effectiveness. The PIM will detail organizational and technical procedures that will govern the project. A separate administrative and financial management and procedures manual will be prepared for financial management and procurement. A separate sub-projects manual will be prepared which will detail the procedures for co-financing of sub-projects under the LIGF (types and categories of sub-project grants, eligibility and prioritization criteria, eligible activities, expenditure items and categories; composition, roles and responsibilities of GCs, processing cycle, control mechanisms and remedies for non-compliance and abuse of funds, complaint-handling, training and technical support mobilization) as it relates to the grant facility mechanism, eligibility criteria, technical and fiduciary, including social accountability. The sub-projects manual will be included as a disbursement condition. The manual will also include guidelines, standard templates and sample documents for concept note, business plan, sub-project agreements, M&E, etc.). The financial management and procedures manual will include quarterly unaudited Interim Financial Reports (IFR). There will also be a separate manual prepared for the Emergency Animal Diseases Control Fund. This manual will also be included as a disbursement condition. The PIM will also include manuals for Monitoring and Evaluation and Safeguards.

Detailed Description and Key Responsibilities

The Project Steering Committee

3. The Project Steering Committee (PSC) will ensure overall performance oversight and policy guidance. It will approve the project's Annual Work Plan & Budget (AWPB)

prepared by the PCO and suggest necessary adjustments based on M&E results and PCO reports. The PSC will provide guidance on project implementation, and resolve any issue of a policy nature that might arise. The PSC will ensure that project activities are implemented in accordance with national policies, procedures and legislation, and coordinated where appropriate with other development programs and projects. The PSC will meet twice per year. Extraordinary meetings could be called by the chair if needed. The NPC will serve as the Secretary of the PSC.

4. The PSC will be chaired by the Permanent Secretary of the MoAL and will comprise representatives of *inter alia*: (i) representatives of all MoAL Departments as well as Ministries in charge of finance and national planning, trade, gender in development, health scientific research and education; (ii) farmers' union and associations including the ZNFU, PAZ, DAZ, the Beef/Cattle associations and representative of the Pigs Commodity Committee of the ZNFU, small-scale and peasant farmers association; (iii) sector projects; and (iv) the private sector. The composition of the PSC will be outlined in the PIM.

The Technical Committee

5. The PSC will be supported by a Technical Committee (TC) which will be nominated from within the MoAL's Technical Services Branch and from other relevant agencies as needed. The TC will include the Director of Livestock Development, the Director of Veterinary Services, the Director of Policy and Planning and technical specialists to be nominated by the MoAL according to project technical requirement including social, environment and gender. The NPC will serve as the Secretary of the TC.

6. The TC will be established to monitor and analyze project implementation and performance on behalf of the PSC. The TC will be responsible for reviewing physical and financial progress and analyze all project reports and proposals submitted by the PCO in order to make recommendations for approval by the PSC. The TC will hold quarterly meetings with the PCO or on an *ad hoc* basis when needed. The TC will be also responsible for the selection of proposals submitted under the Pasture Management and Forage Development Grant and the Producer Organization Matching Grant. The TC will ensure the final selection of the candidates for the training program.

7. A provision will be allocated in the budget to allow the TC to mobilize technical expertise on a short term and *ad hoc* basis when specific technical support will be needed to analyze and advise on specific project activities.

Provincial Project Coordination Offices

8. The PCO and PPCOs will be responsible for the day-to-day overall project coordination, implementation, procurement and financial management. More specifically, the PCO will: (i) prepare AWPBs and consolidated project reports; (ii) develop communication and outreach strategy and tools including guidelines and standard formats; (iii) pre-qualify and organize training of technical service providers for use under Component 2; and (iv) establish and undertake project M&E.

9. The PCO will be headed by a NPC who will be assigned on a full time basis. The NPC will be responsible for timely work plan preparation; budgeting and implementation, quality control including safeguards compliance, and monitoring the project management plan and provide input to the Bank's implementation support missions.

10. The NPC will be supported: (i) at national level by key staff specialized in finance and administration, procurement, monitoring and evaluation, safeguards, gender and HIV/AIDS**,** communication, technical specialists and necessary support staff; and at (ii) at provincial level by a Provincial Project Coordinator (PPC), an accountant, a monitoring and evaluation, and necessary support staff. Five PCOs will be established within the provincial structures of the MoAL, one in each of the provinces targeted by the project (Southern, Western, Eastern, Provinces and the Central/Copperbelt/Lusaka provinces covering the Disease Free Zone[34]). The Government will be responsible for providing adequate office space to host the NCO and PCOs.

11. The PCO and PPCOs will comprise civil servants from the public administration to be assigned to the project on a full time basis and contracted staff in specific technical areas to fill gaps in the Ministry's establishment. The NPC, an accountant, procurement and gender specialists will be assigned by the Government. For the other PCO and PPCOs staff, the MoAL will assign staff on a full time provided this did not disrupt the implementation of core public activities. Both civil servants and contracted staff will be selected based on competitive selection process agreeable to IDA and validated by the PSC. Staff will initially be assigned or contracted for one year, renewable based on positive performance evaluation.

Provincial and District structures of MoAL

12. In addition to PCO and PPCOs, the project will use provincial and district structures of the MoAL to strengthen its linkage and provide support to producers. Main responsibilities of these entities will include: (i) preparing provincial AWPBs; (ii) sensitizing producers and information sharing; (iii) establishing and consolidating producers' groups; (iv) supporting producers in the preparation of sub-projects (SP) concept note (CN); (v) providing technical support to producers for sub-project implementation; (vi) monitoring project activities; and (vii) managing the disbursement of resources provided under the matching grant facility.

13. To assist in organizing and supervising district and provincial activities, the Government will designate project focal points. Among others tasks, the District and Provincial Focal Points (DFPs and PFPs) will be specifically responsible for: (i) pre-screening, official registration and transmission of SP concept; (ii) organization and serving as secretariat of the GCs; (iii) official communication to promoters of the SPs about results of GCs; and (iv) registering and handling of complaints. The DFP will monitor project implementation in their districts, ensure the transmission of sub-project proposals, and facilitate the communication between the producers and the provincial coordination offices.

[34] All districts in Central province, Lusaka, Kafue Chongwe and Luangwa in Lusaka province and Mpongwe and Masaiti in the Copperbelt Province.

Grant Committees

14. After a pre-screening at district level, sub-projects proposals submitted by the beneficiaries will be transmitted to the provincial level where a GC will be established in each province of the project area. The GCs will comprise representatives of: (i) MoAL (senior provincial animal health and animal production officers); (ii) local producers associations; (iii) local authorities; and (iv) PPOs.

15. The GCs will pre-assess sub-project proposals before detailed preparation is undertaken and ensure final quality and selection before implementation. The pre-assessment of concepts and final selection of sub-projects will be based on the eligibility criteria and procedures detailed in the PIM. GC meetings will be convened by the designated project focal point when an appropriate number of applications have been submitted. The designated focal point will serve as the GC secretariat.

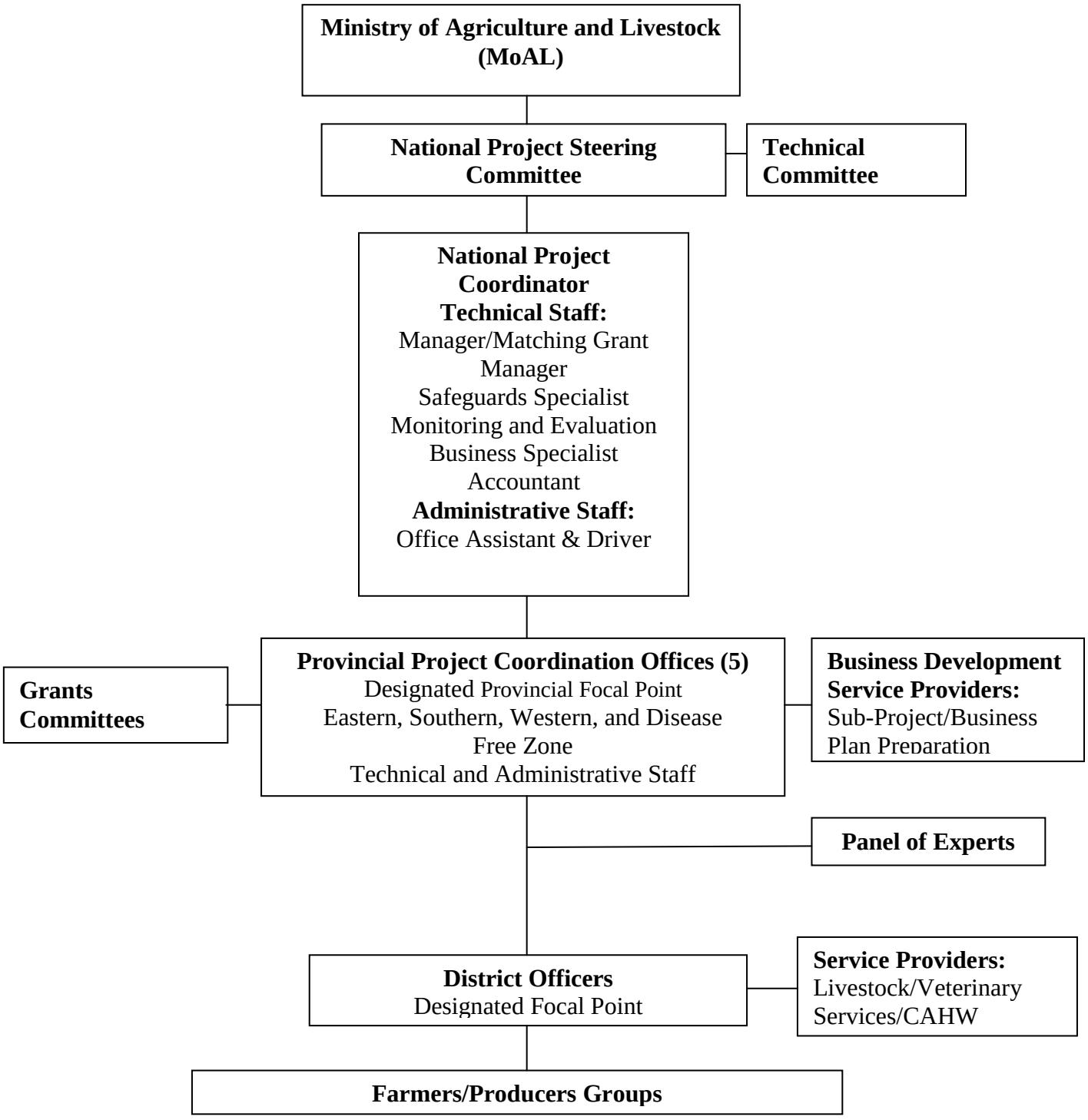
Service Providers

16. Once a sub-project concept proposal has been submitted by an interested applicant and has been pre-selected by a GC, the applicant will be assigned a trained specialized service provider to assist in the preparation of a detailed business plan for the investment package. The PCO and PPOs will be responsible for identifying and training service providers. Service providers will be competitively pre-selected on the basis of technical competencies within the private sector to include individual specialists, consultancy organizations, NGOs and producer associations. Service providers will be remunerated according to the complexity of the sub-project to be prepared and after successful appraisal for technical soundness by the GC. Budget will be allocated in the project to allow the GC to mobilize additional support if specific technical skills are required as part of the business plan review process.

Specific implementation arrangements

17. The PCO and PPCOs will not directly implement sub-project activities but will sub-contract this responsibility through a Memorandum of Understanding (MoU) with public or private service providers for specific activities under the overall oversight of the PCO. Activities to be implemented under these specific implementation arrangements will be detailed in the PIM.

Figure A3.1: The Organogram for Implementation Arrangements:



Financial Management, Disbursement and Procurement

A. Financial Management

18. A financial management assessment of the Ministry of Agriculture and Livestock (MoAL), the implementing entity was carried out in accordance with the Financial Management Manual for World Bank-Financed Investment Operations, issued by the Financial Management Sector Board on March 1, 2010 and the ORAF Financial Management Draft Interim Guidance Note issued by the World Bank's Africa Region Financial Management (AFTFM) unit on September 30, 2010.

19. The objective of the assessment is to determine whether MoAL has adequate minimum financial management arrangements to ensure that: (a) the funds are properly accounted for and used only for the purposes intended, in an efficient and economical way; (b) capacity exists for the preparation of accurate, reliable and timely periodic financial reports; (c) internal controls exist which allow early detection of errors or unusual practices as a deterrent to fraud and corruption; (d) the project's assets are safeguarded; and (e) the project is subject to external audit oversight. The overall financial management residual risk for the project is assessed as substantial.

20. The Bank will use the Country financial management systems for managing LDAHP under the MoAL. The following elements of the system or part thereof will be used: Budgeting - the project will be reflected in the National Budget; Accounting and Financial Reporting - the project transactions will be accounted for and reported on through the existing Government's Integrated Financial Management Information System (IFMIS); Treasury Management/Funds Flow - the project will use the Government's banking arrangements and treasury procedures at the Bank of Zambia (the Country's central bank), to access the funds; Internal Controls and Internal Audit - using the existing national rules and financial control procedures when implementing the project; and External Audit oversight - using the Country's supreme audit institution, the Auditor General, to audit the project financial statements and reporting the findings to Parliament.

21. Assessment of the Country financial management system has concluded that the risk associated with the use of country systems is high. The main risks identified are possible delays in the flow of funds to the project through the Country's treasury system; delays in accounting for funds transferred as advances to sub-projects in the provinces and districts; poor control environment resulting from the non-compliance and lax enforcement of existing financial rules and regulations,(including procurement requirements), which may result in credit funds being used for unintended purposes. Other risks are associated with unused project funds at the end of the fiscal year being swept back to Government and therefore funds not available to the project; the existing accounting system, FMS, not able to produce accurate, reliable and timely financial information; inadequate numbers of accounting staff at the provinces and districts to manage project funds; weak internal audit capacity; and poor follow up/remedial actions to audit findings and non-functioning audit committees.

22. Notwithstanding the risks identified, a number of risk mitigation measures have been considered which will be recommended for implementation as part of the financial management improvement plan. These measures will include: (i) A tailor- made financial management procedures manual that will provide guidance to staff on all aspects including expenditures that are ineligible under the project; (ii) The MoAL Internal Audit will benefit from technical assistance provided by cooperating partners under the existing PEMFA component of the Public Sector Management Program Support Project whose outcomes will include: new audit methodologies/approaches/strategies designed in line with International Standards for the Professional Practice of Internal Auditing; a revised Internal Audit Manual; standardized Internal Audit Working Papers; a Quality Control Manual; and development of a Risk Management Framework for the Public Sector; and (iii) Further, the financial management control and reporting will be enhanced by IFMIS that has been rolled out to the MoAL. The project will be subject to an annual external audit by the Auditor General, who has the constitutional mandate to provide audit oversight for all Government funds, using agreed terms of reference. The audited report, financial statements and management letter on matters arising from the audit will be submitted to IDA within six months after the end of the fiscal year.

23. With the foregoing measures fully implemented, the financial management and disbursement arrangements for LDAHP satisfies the Bank's OP/BP10.02 minimum requirements.

Risk Assessment and Mitigation Measures

24. The overall financial management residual risk rating for the project is assessed as Substantial. Table A3.1 below summarizes the risks identified, the risk rating and mitigating measures, if any.

Table A3.1 Risk Assessment and Mitigation Measures

Risk	Initial Risk Rating	Risk Mitigating Measures	Residual Risk Rating
Inherent Risk			
Country Level. Lack of accountability; poor enforcement & compliance with existing regulations/ procedures; and lack of, and lukewarm implementation of auditors' recommendations; and the lack of sanctions for offenders.	**S**	The Government is implementing a Public Finance Management reform agenda supported by cooperating partners. This includes implementation of the IFMIS that was rolled out to the MoAL Headquarters in July 2011 by the MoFNP. Once fully operational, IFMIS will improve the accountability and control environment in the Ministry.	**S**
Entity Level: ➢ Poor financial management performance of the Ministry of Agriculture under the ongoing ADSP and other previous World Bank-financed projects. ➢ The Ministry is not adequately funded through the National Budget and can divert project funds for own use.	**S**	➢ The project will have a specific Implementation Manual (PIM) which will include detailed financial management procedures to guide staff. ➢ Project transactions will be processed using IFMIS rolled to the MoAL in July 2011 and which is expected to be fully operational by the time of project effectiveness. ➢ Staff in MoAL including provinces and district accounting staff involved with the project will be trained in financial management and disbursement arrangements in IDA assisted projects.	**S**
Project Level: The nature, size and design of the project: ➢ The project design is relatively Complex: (i) a mixture of public investment involving infrastructure development, support to animal health, and capacity strengthening of the Ministry; and (ii) "on-farm support" which would center on private investments through matching grants and strengthening of producer organizations. ➢ The project involves decentralized implementation arrangements. ➢ There will be many spending units with large numbers of small amounts through the matching grant.	**H**	➢ A Project Implementation Manual will be produced (PIM). The PIM will include the Organizational and Technical Procedures such as fiduciary arrangements and detailed procedures eligibility criteria and accountabilities under the matching grant scheme.	**S**
Overall Inherent Risk	**H**		**S**

Risk	Initial Risk Rating	Risk Mitigating Measures	Residual Risk Rating
Control Risks			
Budgeting: The budget lacks sufficient details and a system to monitor the budget performance.	**M**	• The project budget will be included in the National Budget using the IFMIS chart of accounts to analyze the budget by component and activities. • The budget will be based on approved Annual Work Plan and Budget by the Project Steering Committee and IDA. • Budget variations will require prior approvals. • Quarterly interim financial reports that will include comparisons of budget to actual with explanations for variations will be a requirement for reporting purposes.	**M**
Accounting: ➢ Inadequate staff capacity and chart of accounts to perform project accounting functions. ➢ The manual accounting systems are inadequate to account for project activities. ➢ The entity does not adopt acceptable accounting standards. ➢ Inadequately qualified staff at the province and districts to carry out the functions.	**S**	• The MoAL financial management unit to spread the project accounting functions amongst the existing staff of the unit to ensure adequate segregation of duties and counter checking of entries by other staff. • IFMIS, a computer based system, has been rolled out to the Ministry and it is expected to be fully operational by the time the project is effective. IFMIS has a project module that should take care of accounting aspects of the project. • Currently the Country has adopted the IPSAS cash basis of accounting, which is yet to be fully implemented. • Adequate numbers of qualified and experienced accounting staff will be assigned to the project at MoAL headquarters, provinces and districts.	**S**
Internal Control: Weak control environment resulting from poor enforcement of existing financial regulations; weak management oversight; and inadequate internal audit function.	**H**	• Produce a tailor made project financial procedures manual to provide guidance to staff. • Internal audit functions to be revamped through provision of TA under another IDA supported PEMFA project where resources have been provided to the Controller of Internal Audit to improve methodologies/practices focusing on risk and systems audit; and	**S**

Risk	Initial Risk Rating	Risk Mitigating Measures	Residual Risk Rating
		production of audit manuals. • Revamp and ensure audit committees work as intended.	
Funds Flow: • Funds may not flow to the project in a timely manner through the Country treasury system (Bank of Zambia). • The unused funds at the end of the fiscal year may not be available to the project. • Delays in the flow of funds for matching grants sub-projects occasioned by accounting delays for funds disbursed as advances which will not be treated as expenditures for replenishment of Designated Advance account by the World Bank.	**S**	• Eligibility criteria and accountability procedures to be detailed in the PIM. • All accounting staff will be trained and sensitized on the importance of making timely retirements of advances.	**S**
Financial Reporting: ➢ Untimely submission of the financial reports due to these reports being produced manually outside the computerized FMS. ➢ Inaccurate accounting figures produced manually. ➢ Inadequate numbers of appropriately qualified staff.	**S**	• IFMIS project module software will be used for accounting and reporting purposes. • The accounting functions for the project will be spread over the Ministry's accounting staff to ensure adequate segregation of duties.	**S**
Auditing: Unacceptable audit and untimely submission of the audit reports and lack of follow up on audit findings.	**S**	• The audit will be based on agreed TOR which will specify the approach, scope and timing. • Revamp and ensure audit committees work as intended. • As part of supervision ensure planning for the audit is started early.	**S**
Overall control risk:	**S**		**S**
Overall risk rating:	**H**		**S**

Strengths and Weaknesses

25. The main strength identified is that the project will use the existing FM arrangements ranging from staff, procedures and the accounting information system. The Chief Accountant, Provincial Accountant and District Accountant will have overall responsibility for the project's financial management at Ministry headquarters, provincial and district levels respectively. The IFMIS has been rolled out to the MoAL headquarters which when fully operational by project effectiveness, will improve the accounting control environment at the Ministry. IFMIS will eliminate instances of unbudgeted expenditure. Once expenditure has

been accounted for under IFMIS, financial reports will be produced automatically by the system without manual interventions and in a timely manner. The weaknesses that have been identified are: (i) inadequate numbers of appropriately qualified and experienced accounting staff especially at the provincial and district levels; (ii) non-operational IFMIS, even though the system has been rolled out to the Ministry headquarters and not at the provincial and district level; (iii) the existing financial management system outside IFMIS is manual and unreliable, it is not integrated and lacks the ability to produce reports that compare actual expenditure with budget on a monthly or quarterly basis; (iv) inadequate funds provided to the project and the funds not being provided on timely basis; and (v) a poor control environment at all levels, Ministry headquarters, provincial and district, arising from non-compliance and lax enforcement of existing financial rules and regulations coupled with a weak internal audit function that focuses on pre-audit of expenditure instead of systems and risk-based audit. In addition, there is a lack of timely management follow-up or none at all, on audit findings and recommendations. All these weaknesses will be mitigated if the proposed financial management improvement plan is fully implemented.

Financial Management Improvement Plan

26. In order to strengthen the control environment and to mitigate the identified financial management risks, the following actions should be taken by the due dates:

Table A3.2 Financial Management Improvement Plan

#	Required Action	By Whom	By When,	Comment
1.	Submit a financial management procedures manual as part of the Project Implementation Manual (PIM)	Chief Accountant (MoAL)	Effectiveness	The adoption of the PIM is an effectiveness condition
2.	Prepare the external audit terms of reference (TOR)	IDA Financial Management Specialist	Within 3 months after project effectiveness	
3.	Assign adequate numbers of qualified and experienced accounting staff to the project to carry out functions at the Ministry Headquarters, Provinces and Districts	MoAL PS Accountant General MoAL Chief Accountant	June 30, 2012	The borrower has given an undertaking and this has been included in minutes of negotiations
4.	Provide training in the Bank's financial management & disbursement procedures to the MoAL accounting staff.	IDA Financial Management Specialist	June 30, 2012	Agreed by March 2012

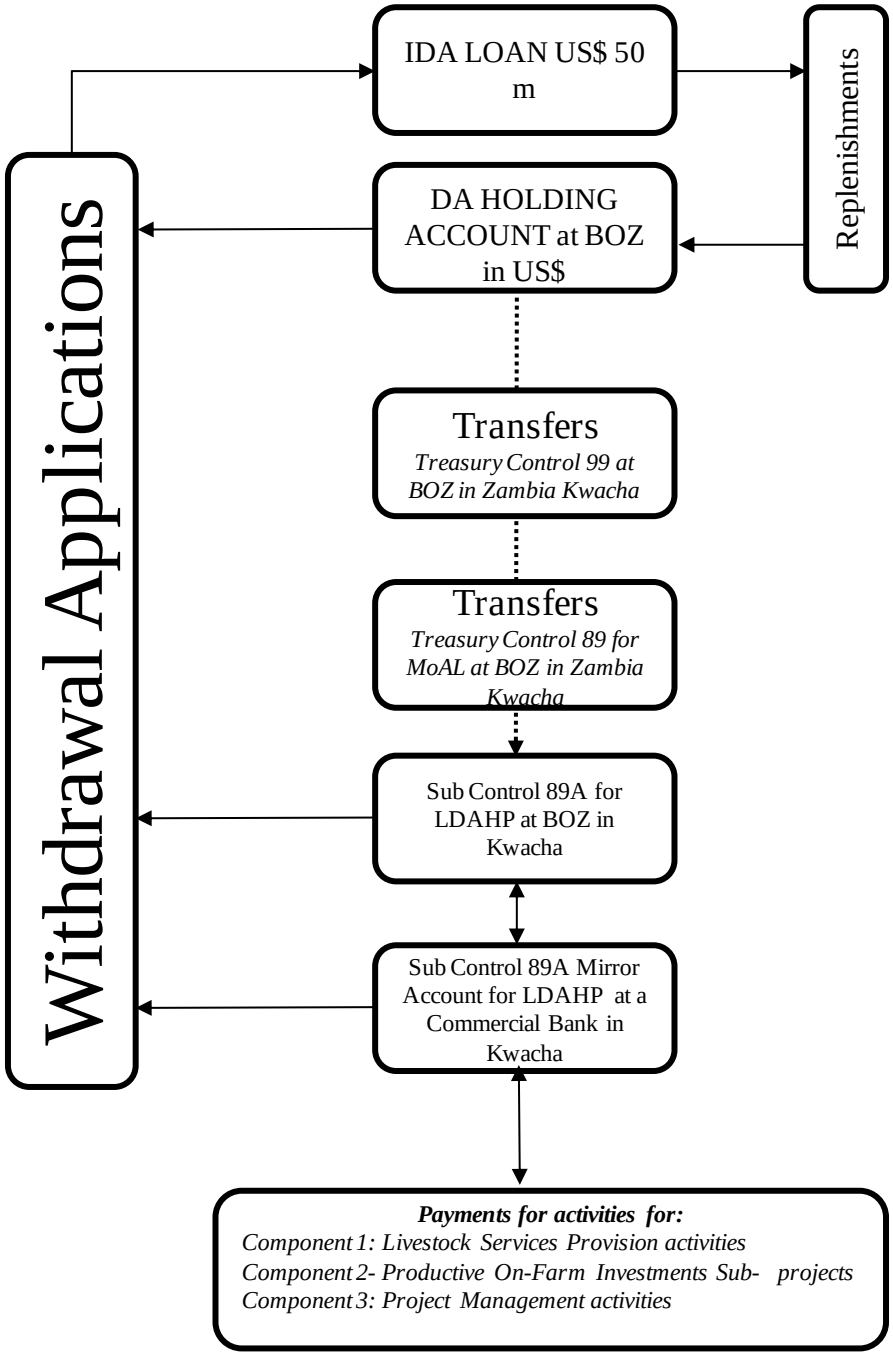
27. **Budgeting arrangements.** The Government's current budget process will be followed. The project's budget will be prepared under MoAL using existing national budget classifications of programs and sub-programs linked to the IFMIS Chart of Accounts with LDAHP separately identified. The PSC will approve the project's annual work plan & budget that will form the basis for the national budget. The budget will be submitted to the MoFNP for consolidation and will be presented, debated and passed by Parliament. The

budget cycle is from January to December. If at the time of project approval the national budget has been passed, there are supplementary budget provisions to ensure that the project is included in the National budget. The budgeting arrangements are considered adequate.

28. **Accounting and Reporting.** All project transactions will be accounted for and reported on using the IFMIS rolled out to MoAL in July 2011, which is expected to be fully functional by effectiveness date. The weakness with the existing FMS is that it is a non integrated stand alone system which is relatively manual and lacks the analytical capabilities and the reports produced do not show activities and actual expenditures are not compared with budget. This weakness will be overcome through the use of IFMIS, which is a robust system with a project module to capture all transactions. MoAL will produce and submit to the Bank on a quarterly basis unaudited IFRs, not later than 45 days after the end of each calendar quarter. The formats and contents of the IFRs will be agreed at negotiations. The overall responsibility for financial management will rest with the Chief Accountant, who is the head of the MoAL headquarters -Financial Management Unit, Provincial Accountant – head of accounting functions at the province and the District Accountant – head of accounting functions at the district assisted by other accounting staff within their departments respectively, to allow for adequate segregation of duties and therefore enhancing the operation of a system of internal controls. At the MoAL headquarters a dedicated accounting staff with adequate qualifications and experience, reporting to the Chief Accountant, will be assigned the overall responsibility for the accounting functions of the project.

B. Flow of Funds and Disbursement Arrangements

Figure A3.2: Flow of Funds



29. The funds will flow from IDA to a Designated Account (DA), a Holding Account, to be held in United States dollars at the BoZ to be operated by MoAL. Funds will be transferred from the DA through the Treasury Control 99 to Control 89 (MoAL) and Sub–Control Account 89A (LDAHP), at BoZ, in local currency, to be administered by MoAL. Mirror

accounts, linked to the Sub- Control Account at BoZ, will be opened at a commercial bank to be managed by MoAL to facilitate payments to suppliers and service providers. The mirror accounts will operate as per the existing financial rules and regulations, which through the use of the backing sheet listing the total value of the checks raised for a period are transferred to the commercial bank to honor those checks on the backing sheet and no bank balances are allowed on this account. In terms of procedure, the MoAL will request funds to move from DA to Control 99 by issuing instructions to BoZ that have been endorsed by the office of the Accountant General at MoFNP. The BoZ, on transfer, should advise MoAL of the amount transferred and the exchange rate used. Transfers from Control 99 to Control 89 will be initiated by MoAL to the MoFNP Budget Office who will in turn instruct the BoZ to transfer the funds to Control 89, and will issue a funding slip to MoAL. The funds that have to be transferred to Control 89 from Control 99 should be the exact amount transferred from the DA Holding account intact. Therefore, the project will request that funding to the Sub-Control 89A should not be based on the funding profile mechanisms, which in practice are subject to changes by MoFNP depending on the resources available in the national treasury. Funds will be disbursed directly to the cost centers from the project account except where adequate accounting capacity has been assessed and found acceptable to the Bank. In this instance, bank accounts at the provinces or districts to hold advances for Sub-project grants under Component two and other activities under Component one will be opened as and when necessary. For sub-projects, this will be based on the requirements in the Sub-projects financing agreement to be signed with the grants beneficiaries that meet the sub-projects eligibility criteria outlined in the PIM. Details of all the bank accounts and their signatories, which will be opened for the MoAL headquarters, and as necessary for the provinces and districts will be submitted to the Bank.

30. There are some identified risks in the flow of funds through the central treasury and the transfers to the Sub-projects. The channeling of project funds by the Bank through the Country's treasury accounting system is new and has not fully been proven to work well and efficiently. Therefore, the likely consequences may be delays in the flow of funds to the project and possible diversion of funds for purposes not intended by the project, when all the funds are not transferred in full to the project. In addition, unspent funds at the end of the fiscal year are automatically swept from the bank accounts (i.e., funds taken back by the Accountant General to start a new budget process), which will violate the Bank's disbursement procedures. Additional risks relate to those funds for Sub-projects to be managed at the districts where adequate capacity to account for funds efficiently may be in doubt. These risks will be managed by the borrower who has assured that all necessary steps and guarantees will be taken to ensure a smooth flow of funds to the project. The flow of funds will be subject to revision based on the implementation experience of the Irrigation Development and Support Project (IDSP), another project being implementation by MoAL that has adopted the use of central treasury in the channeling of funds to the project. Further, the borrower has made an undertaking to assign adequate numbers of qualified staff at all levels to carry out the necessary accounting functions. Moreover, the Bank will provide training in financial management and disbursement procedures in Bank assisted projects to the entire ministry's staff who will be managing the project. All the bank accounts that will be involved in the flow of funds will be reconciled on a monthly basis and all reconciling items dealt with expeditiously.

31. The proposed disbursement methods for the project will be DA advance based on unaudited quarterly IFRs. Disbursements for Matching grants and sub-grants will be treated as advances and will not be regarded as expenditure until they are fully accounted for. Other methods available will include direct payments by the Bank to the suppliers; Reimbursement; and Special Commitments. Except for the DA advance replenishments, the other methods are subject to the minimum withdrawal application size of 20 percent of the amount advanced to the DA. Applications for direct payment and reimbursement shall be supported by records of such expenditures and evidence of payments made in the case of reimbursements. All expenditure supporting documents shall be retained by MoAL and shall be made available for audit and to the Bank and its representatives upon request during supervision missions.

Internal Control

32. LDAHP will use the rules and regulations under the existing Finance Act 2004 and Financial Regulations 2006 to process transactions. While the current accounting regulations are adequate to assure a strong control environment, the risk identified is the lack of compliance and enforcement. In addition, there is the real risk of payment of some allowances, such as sitting and out of pocket allowances, because these payments are allowed by Government but not by the Bank. To mitigate these risks, a financial management procedures manual acceptable to IDA will be produced to provide guidance to staff. The manual will document policies and procedures that are specific to the project and will identify expenditures that are ineligible for financing under the project.

Internal Audit

33. The project will use the existing internal audit department at MoAL headquarters provinces and districts. Capacity weaknesses with regard to the adequacy of staff and technical skills required to adopt a risk-based approach and forensic audit are identified risks. Despite the existence of regulations allowing for the establishment of an internal audit committee, this committee is yet to become operational. Under another Bank supported project, PEMFA, technical assistance is available through the Controller of Internal Audit at MoFNP for consultants to review the existing Internal Audit Institutional and Functional Framework to come up with, new audit methodologies/approaches/ strategies in line with International Standards for the Professional Practice of Internal Auditing, revised Internal Audit Manual, standardized Internal Audit Working Papers, develop Quality Control Manual and a Risk Management Framework for the Public Sector. When the new methodologies are finally adopted, they will be applicable to all the ministries, and it is hoped that internal audit functions in the public sector will improve and the project is expected to benefit from the new practices.

External Audit Arrangements

34. The LDAHP will be audited annually by the office of the Auditor General, which has the constitutional mandate to provide external audit oversight for all Government funds. A copy of the projects audited financial statement including the auditor's opinion and management letter will be submitted to the Bank not later than six months after the end of each fiscal year. The auditors will perform the audit according to agreed terms of reference acceptable to IDA. In accordance with the Bank's disclosure policy, the audited financial report will be disclosed to the public. The audit reports are due for submission to IDA not later than 6 months after the end of the fiscal year.

Supervision Plan

35. The FM risk rating for LDAHP has been assessed as Substantial. Therefore, in line with FM guidelines for this level of risk, the supervision intensity will require two site visits of one week duration per annum to review the controls and sample transactions. The other supervision methods will be desk reviews of quarterly unaudited financial reports and the annual audit reports and management letter and follow up on implementation of auditor's findings and recommendations.

Disbursement Conditions

36. The project will not disburse any funds to the Emergency Animal Disease Control Fund (EADCF) unless the procedures and operational manual for the EADCF has been prepared and reviewed by the Bank. Furthermore, funds will not be disbursed for the matching grant facility unless the MoAL has: (i) recruited a matching grant specialist; (ii) adopted a Subproject Manual; and (iii) for each respective Subgrant, a Subgrant Agreement has been executed. There will not be any retroactive financing under the project.

Allocation of Credit

37. The proceeds of the Credit will be disbursed over a period of six years under the following expenditure categories and representing expenditures exclusive of taxes (Table A3.3).

Table A3.3: Allocation of Credit by Expenditure Category

Category	**Amount of the Financing Allocated (expressed in US$)**	**Percentage of Expenditures to be Financed (exclusive of Taxes)**
(1) Goods, works, non-consulting services, consultants' services, Training and	32.73	100%

Operating Costs for the Project (excluding Emergency Animal Diseases Control Fund)		
(2) Goods, works, services and Compensation Payments for Emergency Animal Diseases Control Fund of the Project.	0.10	100%.
(3) Goods, works, services, Subproject Operating Costs and Subproject Training for Subprojects under to be financed out of the proceeds of Sub grants part of the Project	16.17	100% of amounts payable pursuant to the respective Subgrant Agreement
(4) Refund of Preparation Advance	1.00	Amount payable pursuant to Section 2.07 of the General Conditions
TOTAL AMOUNT	50.00	

Table A3.4: Proposed Interim Financial Report - Formats and Contents

Republic of Zambia
Livestock Development and Animal Health Project (P 122123)
IDA Credit_____
Statement of Sources and Uses of Funds for the Quarter ending_____

	Quarter	Cumulative for the Year	Project Cumulative	Forecast Next 6 Months
Source of Funds: IDA Holding Account in US $ at BoZ			**US$ 50.00 m**	
Cash Available			**US$ 50.0 m**	
Less: Uses of Funds by Category				
1. Goods, works, non-consulting services, consultants' services, Training and Operating Costs for the Project.			**US$ 32.73 m**	
2. Goods, works, services, Subproject Operating Costs and Subproject Training for Subproject under Part (2) of the Project			**US$ 16.17 m**	
3. Goods, works, services and Compensation Payments for Emergency Animal Diseases Control Fund			**US$ 0.10 m**	
4. Refund of Project Preparation Advance			**US$ 1.00 m**	
Total Expenditure			**US$ 50.0 m**	
Cash Available Less Expenditure				
Net Cash Available				
Closing Cash Balances IDA Holding Account in US $ at BoZ				
Sub Control Account 1 (Kwacha) at BoZ Sub Control Account 2 (Kwacha) at BoZ				
Total Closing Cash Balances				

Table A3.5: Proposed Interim Financial Report - Formats and Contents

Republic of Zambia
Livestock Development and Animal Health Project (P122123)
IDA Credit No._____
Uses of Funds by Component/ Activity for the Quarter ended_____(in US $)

Project Component/Activity	Quarter			Cumulative for the year			Total Project Life
	Planned	Actual	Variance	Planned	Actual	Variance	
Component 1: Livestock Services Provision							**25.45m**
➢ Strengthening the Surveillance, Diagnostic and Control of Animal Diseases							**9.89**
➢ Support for Livestock Infrastructure and Access to Services							**8.44**
➢ Institutional Support to MoAL							**7.12**
Component 2: Productive On-farm Investments							**18.15m**
➢ Support for the Livestock Improvement Grant Facility(LIGF)							**14.69**
➢ Pasture Management and Forage Development							**2.20**
➢ Strengthening Capacities of Non-Public Service Providers							**1.26**
Component 3: Project Management							**5.40m**
➢							
➢							
➢							
➢ **Total Project Financing**							**50.0m**[35]

[35] Total Project Financing includes US$1million Project Preparation Advance which is not shown in the table.

Table A3.6: Proposed Interim Financial Report - Formats and Contents

Republic of Zambia **Livestock Development and Animal Health Project (P 122123)** **P122123; IDA Credit……** **Component 2: Productive On-farm Investment - Funds to Sub-grants for the Quarter Ending ___/_____/_____ (in Zambia Kwacha)**									
This statement to be filled in for each sub-project grant and should be accompanied by bank account activity statement reconciliation									
	Description of Activities	**Total Approved Grant Amount (US$)**	**Grant Period, from…/…/.... . To ……/……/…...**	**Actual grant amount advanced in the quarter**	**Cumulative grant amounts advanced for the grant period**	**Actual advance spent and accounted for the quarter**	**Cumulative unspent advances carried forward**	**Forecast advance to the sub-grant for next two quarters**	**Comments**
		A	**B**	**C**	**D**	**E**	**F = D - C**		
LIGF Subprojects under Part 2 (a)									
Subprojects:									
1									
2									
3									
	Subtotal for Part 2 (a)								
Pasture Management and Forage Development Subprojects under Part 2 (b)									
Subprojects:									
1									
2									
3									
	Subtotal for Part 2 (b)								
Non-Public Service Providers under Part 2 (c)									
Subprojects:									
1									
2									
3									
	Subtotal for Part 2 (c)								
Total for Component 2									

C. Procurement

38. **The Procurement arrangements under the project:** The MoAL Procurement and Supplies Unit (PSU) is charged with the responsibility of carrying out procurement under the project. The PSU has adequate staff that are qualified and experienced to carry out the procurement as proposed under the project. Over the past 5 years PSU staff have been implementing the Agriculture Development Support Project which is a grant funded by the Bank. During this time, various the staff of MoAL have been trained to carry out public procurement under Bank supported projects. A new project also funded by the Bank, the Irrigation Development and Support Project (IDSP) (approved April 2011) is being implemented by the same institution. The IDSP and the proposed LDAHP have both had project preparation advances which have been successfully implemented by the procurement staff of the MoAL. The Bank noted however that the staff particularly assigned to carryout procurement under the proposed project is less experienced than those who have been carrying out the procurement under the ADSP and the IDSP. Given this observation and the critical nature of adequacy of staff capacity and experience in carrying out the project and the fact that it took several years to build the capacity of the other staff in the MoAL to carry out procurement effectively, the procurement risk for this project is deemed Substantial. The Bank will monitor the implementation of the agreed risk mitigation actions over the life of the project.

39. **Procurement capacity and risk assessment:** On March 13, 2011, the Bank undertook a procurement risk assessment using the Banks Procurement Risk Assessment Management System (P-RAMS) for the proposed livestock project and has come up with a risk mitigation plan. Once the proposed risk mitigation actions are implemented the residual risk will be moderate. The staff allocation issue whereby less experienced and qualified staff were allocated to the LDAHP arose when there was an attempt in the last two years to create a new ministry, the Ministry of Livestock and Fisheries Development (MoLFD). This was dropped with the recent change in Government following parliamentary and presidential elections in September 2011. All the staff that were to be assigned to the MoLFD reverted to the MoAL. Staff will therefore need to be reassigned to minimize the noted capacity risks following the recent changes. The Record keeping requires improvement particularly with respect to space for keeping hard copies of documents. With time MoAL will need to consider migrating to use of electronic filing and data management.

Table A3.7 MoAL – PSU Risk Mitigation Action Plan

S/N	Risk Area	Action Required	Mitigation Action Plan	Responsible	Action date by
1	Accountability for Procurement decisions	PSU needs to take the lead in procurement and provide guidance to user departments (UDs). Roles of UDs and PSU in the procurement process should be well defined in the procurement manual. PSU staff should not be involved in approvals. Exceptions to this should be clearly spelt out in the Procurement Manual (PM). Procurement manual needs to be updated in line with institutional arrangements and provisions of Act No 12 of 2008 as amended in January 2011. it should also include provisions from the Public Procurement Regulations of July 2011.	Raise awareness to UDs about the need not to be involved in procurement activities. This will be done through issuing of internal memos to all UDs. The PM will stipulate PSU involvement in approvals.	MoAL PSU	Immediate and throughout the life of the project
2	Internal manuals and clarity of procurement process.	Revision of the manuals to update information and improve internal controls and governance aspects. Address provisions of the new procurement law and regulations.	This will be covered in the PM.	MoAL PSU	By Board approval
3	Record Keeping and Document Management.	Improvement of Record keeping and document management system is required through Clear labeling of files, acquiring adequate filing space, and improving the security and storage of files and procurement documents.	Acquiring of adequate filling space e.g. erection of pigeon holes. Undergo training by the Bank in Data Management/filling. Clear labeling of files is needed, and filing space needed. Consider use of electronic filing and data management which may require procurement of a scanner and a server.	MoAL PSU	Immediate
4	Staffing	Capacity improvement is required through (i) Training in contract management and strict adherence to conditions of contract is needed. (ii) Staff to guard against lapses in strict adherence to conditions of contract during contract implementation (iii) staff assigned to the project should include those with sufficient experience to enhance capacity and controls.	Identify training providers of contract management courses. Staff will be sent to undertake the training.	MoAL PSU	Within 6 months of project approval by the Board of the World Bank
5	Procurement planning	Needs to be improved particularly for more complex procurement and to improve realism of cost estimates and time lags between milestones.	MoAL needs to institute procurement planning which is realistic in terms of milestone frames for procurement processes, sequencing and implementation time	MoAL PSU	During Implementation

			particularly for works contracts. Greater involvement of technical staff in planning and implementation with option to outsource additional capacity More thought and collaborative effort needed between PSU staff and UD staff and to understand the peculiarities of the market and practices for the more complex procurement.		
6	Review of procurement decisions and resolution of complaints.	MoAL needs to put in place formal system and publicize to the bidding community on how they will review and resolve complaints from bidders at different stages of the procurement cycle up to contract award. MOAL needs to document and improve record keeping for complaints. And publicize it. MOAL procurement manual to stipulate process.	MoAL PSU will stipulate a formal system in the PM on how to handle complaints.	MoAL PSU	By Board approval

40. **Frequency of procurement supervision and post reviews and scope of post reviews:** Based on the assessed procurement risk which is substantial, the Bank intends to carry out a review of procurement activities at least twice a year. In addition a Procurement post review will be carried out once a year with a 15 percent sampling of completed projects which would not have been subject of the Banks review being included in the projects to be reviewed under a Procurement post review (PPR) or Independent Procurement Review (IPR) as appropriate.

41. **Procurement plan preparation, monitoring and publishing:** A procurement plan for the project was prepared in August 2011 and further refined on December 14, 2011. The procurement plan will be reviewed and updated at least once every year as part of project implementation support missions. A General Procurement Notice GPN will be prepared and published in the UNDB Magazine once a year and the updated procurement plans will be published on line in the Banks external website every year.

42. It includes the procurement packaging and proposed contracts under the project based on the requirements for the 3 components under the project which are (i) Component 1- Livestock Services Provision (ii) Component 2 - Productive On farm Investment and (iii) Component 3 - Project Management. The Procurement plan will be finalized and approved as necessary as part of the negotiations for the project.

Applicable Procurement and Consultants Guidelines.

43. The procurement plan includes the applicable procurement (goods, works and non consulting services) and the consultant's guidelines for the project. These are the "Guidelines: "Procurement of Goods, Works and Non-consulting Services under IBRD

Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 ("Procurement Guidelines") in the case of goods, works and non consulting services and Sections I and IV of the "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011. ("Consultant Guidelines") in the case of consultants' services; as the same shall be elaborated in the procurement plan prepared and updated from time to time by the Recipient for the Project in accordance with paragraph 1.18 of the Procurement Guidelines and paragraph 1.25 of the Consultant Guidelines ("Procurement Plan").

44. The foregoing guidelines will apply in all cases of prior review contracts and all large consulting assignments and large contracts for works and goods which will be subject of prior review by the Bank.

45. With respect to other contracts which will be below prior review limits, the MoAL will use Government's own Public Procurement Law No. 12 of 2008 as amended in January 2011 and the Public Procurement Regulations of July 2011 subject to the following exceptions which the Bank deems unacceptable based on existing policies of the Bank:

Particular Methods of Procurement of Goods

The following methods will be used for procurement of goods: International Competitive Bidding; National Competitive Bidding (NCB); Shopping; Direct Contracting; Procurement from UN Agencies; Community Participation procedures which have been found acceptable to the Association; and Established private or commercial practices which have been found acceptable to the Association

Particular Methods of Procurement of Consultants' Services

The following methods will be used for procurement of consultants' services: Quality and Cost-based selection; Least-Cost Selection; Quality-based Selection; Selection under a Fixed Budget; Selection Based on Consultants' Qualifications; Single Source Selection; Least Cost Selection; and Selection of Individual Consultants

Operating costs

46. The operating costs constitute recurrent costs (excluding purchase of motor vehicles, computers etc.) and will typically include equipment rental and maintenance, vehicle operating costs, maintenance and repair, office rental and maintenance, office materials and supplies, utility costs (including electricity, water and gas) communications (including telephone and internet charges) equipment rent, operation and maintenance and cost of banking services (bank charges), travel cost and transport of the staff associated with project implementation. Sub-project operating costs will fall within this definition of operating cost and will include only such operating costs that are directly associated with the activity that is receiving a grant.

47. These items will be procured using the implementing government agency's administrative procedures, which have been reviewed and found acceptable to the Bank. In the case of sub-projects, the procedures and processes to be used will be established private or commercial practices or community participation in procurement procedures which have been found acceptable to the government and the World Bank and incorporated in the PIM. Contracts for these items should not be included in the procurement plan. The Bank through the Government will carry out procurement post reviews for all expenditures under operating cost as these will not be included under procurement post reviews and independent procurement reviews carried out by the Bank.

Environment and Social (Including Safeguards)

48. Under Component 1, the project will support the Government in strengthening the veterinary services and provide support to the progressive zoning approach. Activities to be undertaken under this component will include: (i) strengthening the surveillance and control of zoonotic and contagious animal diseases which will entail scaling up of the vaccination for major diseases and providing support to pre-defined disease control strategies including vaccination campaigns and progressive zoning approach; and (ii) building capacities for laboratory diagnostic which will support laboratories infrastructure improvement, and provide equipment, material and consumables, among other interventions. These interventions will generate bio-medical wastes and use of pesticides that would need to be properly managed to avoid severe negative impacts to the biophysical environment, which would occur if these are not properly managed.

49. Component 1 activities will also provide support to the MoAL and local councils to establish key livestock infrastructure and access to livestock services. Specifically, the activities will support construction or rehabilitation of essential livestock industry infrastructure such as livestock service centers, markets, slaughter facilities, etc. Potential negative impacts from construction or rehabilitation of livestock infrastructure would include noise pollution from heavy machinery and vehicles, air pollution as a result of increased dust, occupational health and safety risks to construction workers, generation of construction waste, etc.

50. Additional negative impacts would also result from improving key production systems such as meat and milk from cattle and small ruminants, poultry and pigs. Other negative impacts will be generated from the following operations as indicated below:

51. **Livestock markets and slaughter facilities** would generate solid wastes including animal waste (feces), which, if not collected and well disposed, would run off into drains and pollute water courses during the rainy season; slaughter house wastes which include un-recycled blood and other solid waste (unwanted material) that, if not well dispose of, would pollute the surrounding environment and create poor hygiene conditions and scavenging around the slaughter houses and surrounding environment. Contaminated runoff and waste water from livestock markets could pollute local drains and water courses if not treated. Poor or non-existent sanitary facilities for workers, drivers and traders could results in extensive open defecation in and around the premises.

52. **Dairies and milk collection centers** will generate large volumes of waste water that needs to be well managed and treated before being released to local drainage systems to avoid pollution of water systems or uncontrolled release into the surrounding environment.

53. **Increased poultry production systems** for both smallholders and industrial producers are sometimes affected by diseases such as avian flu and new castle disease, which require professional management**.** In some instances, human disease outbreaks would occur from zoonotic diseases arising from these production systems.

54. The project would also have to ensure proper disposal of all waste generated by all production systems in order to avoid illegal dumping of such waste which would, in some instances, result in exposure of wildlife to such infectious waste that may result in diseases.

55. In some parts of the country, the project will include areas where there are wildlife/livestock interfaces which result in competition for pastures and the associated interaction between livestock and wildlife. Potential negative impacts under such conditions include uncontrollable management and spread of diseases such as foot and mouth disease between the two stock types.

56. Because the actual physical location of the project sites will not be known and subsequently site specific impacts cannot be determined by project appraisal, and therefore, the Government of Zambia has commissioned an environmental and social management framework (ESMF) that will establish a unified approach for the management of all identified potential impacts.

57. The project has been classified as category B – Partial Assessment according to environmental assessment and it triggers the following five safeguards polices:

58. OP/BP 4.01 for environmental assessment (EA) due to the potential impacts outlined; OP/BP 4.04 for Natural Habitats due to potential wildlife/ livestock conflicts that are envisaged in some parts of the project area such as Maala in Namwala district of the Southern province; OP/BP 4.09 for Pest Management due to the use of pesticides in tick control and other areas; OP/BP 4.11 for Physical Cultural Resources; and OP 4.12 for Involuntary Resettlement because of civil works for the construction of infrastructure at a number of sites that will take place. All future sub-projects to be funded under the project during implementation will be screened to ensure compliance with triggered safeguards policies. No sub-projects that trigger new safeguards policies will be funded during project implementation. The ESMF provides guidance for the preparation of Environmental and Social Impact Assessments/Environmental and Social Management Plans to manage environmental and social impacts. It includes measures to minimize wildlife/livestock conflict, such as: awareness raising to prevent encroachment on protected areas; consideration of alternative locations/siting of LSCs; strengthening natural resource management capacities; decreasing overgrazing through constant monitoring of carrying capacity and adopting integrated grazing management; training communities in sustainable uses of resources; establishing buffer zones around protected parks and wetlands; and,

strengthening local and government institutional capacity to resolve conflicts involving wildlife and livestock. The ESMF provides guidance to identify and help protect physical cultural resources, including: identifying national heritage objects and sites that must be protected; increasing public awareness about the importance of national heritage objects and sites; strengthening local and government institutional capacity to protect national heritage objects and sites; enforcing existing laws; and consideration of alternative locations/siting of subprojects.

59. The potential social impacts of components under the proposed project will be small-scale and site-specific. Women are a key target group and a minimum of 30 percent women beneficiaries should be set as a project target. It is anticipated that project activities will not lead to land acquisition or major restriction of access to sources of livelihood. Project's activities will be screened by the environment and social specialist for applicability of OP 4.12 (Involuntary Resettlement), based on the Resettlement Policy Framework (RPF) prepared for the project. In the event that people are physically or economically displaced because of the Project's activities, a Resettlement Action Plan (RAP) will be prepared in accordance with the requirements of OP4.12, before the commencement of any relocation activities. This plan will be cleared by the Bank, consulted upon, and disclosed. When repercussions are minor (i.e., affected people are not physically displaced and less than 10 percent of their productive assets are lost) or affected people are less than 200, an Abbreviated Resettlement Action Plan (ARAP) will be prepared.

Monitoring and Evaluation

60. The results framework in Annex 1 defines performance indicators for each component and sub-component. A baseline study has been included as part of the Project Preparation Facilities in order to fine-tune the performance indicators. A procedures module for M&E acceptable to IDA will be prepared as part of the PIM in order to provide implementation guidance to project staff.

61. The PCO will be responsible for project's overall monitoring and evaluation (M&E) and for meeting the agreed reporting requirements. The PCO will establish, host and maintain within the MoAL an LDAHP specific Management Information System (MIS) and M&E Plan. The information system will record M&E inputs and track project's activities. The PCO's M&E specialist will also be responsible for providing training courses to PPCO's and focal point staff and MoAL's M&E staff, to ensure that the required information will be made available and prescribed in a uniform reporting process.

62. The M&E system will be designed to link technical and financial data on project progress and impact. It will be linked to a Geographic Information System (GIS) in order to spatially report and display the results. It would work as both a mechanism for assessing project results and as a day-to-day management tool. It would support project supervision by ensuring follow-up surveys and data collection for the key performance indicators.

63. The M&E system will include regular surveys, impact evaluation and annual user satisfaction surveys. It will include environmental monitoring indicators to determine (i) the use of the environmental screening for subprojects and investments; (ii) the effectiveness of

environmental mitigation measures implemented; and (iii) the extent to which sub-projects are maintained in an environmentally and socially sustainable manner. The M&E system will also allow gender-disaggregated indicators. Additional sources of information will include existing country monitoring systems, such as information collected by the M&E Unit of the MoAL.

64. At the district level, the focal points will monitor the implementation of subprojects, collect and transmit data to the PPCOs. The data collected at the district level will be consolidated and analyzed at the PPCOs and transmitted to the M&E specialist at the PCO. M&E reports, including environmental monitoring results, would be produced quarterly at the provincial levels, and every six months at the central level.

65. Semi-annual joint supervision missions with Bank, Government and key stakeholders' representatives will assess the status of project outcomes. A Mid-Term Review will be conducted no later than three years after the first disbursement. The Project will also carry out specific results studies, ad-hoc surveys and participatory assessments. Independent impact assessments would be conducted not later than at midterm, and six months before project completion to assess overall achievement of expected project results.

66. Component 3 will finance costs related to: (i) data collection and reporting on key performance output and impact indicators, including targeted data collection, surveys, participatory assessments and mid-term and final evaluations; (ii) annual evaluation of performance indicators and user satisfaction surveys; and (iii) independent impact assessments.

Annex 4: Operational Risk Assessment Framework (ORAF)
Stage: Board

<table>
<tr><td>Project Stakeholder Risks</td><td>Rating</td><td colspan="3">Moderate</td></tr>
<tr><td rowspan="2">Description: The smallholder producers have been accustomed to free services provided by the Public Veterinary Services and may resist cost recovery or fee based services. The failure to recover costs for fee based services will render those services unsustainable.</td><td colspan="4">Risk Management: Provide training and create awareness to induce behavioral change.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Impl</td><td>Due Date : 06/30/2018</td><td>Status: Not yet due</td></tr>
<tr><td colspan="5">Implementing Agency Risks (including fiduciary)</td></tr>
<tr><td>Capacity</td><td>Rating:</td><td colspan="3">Substantial</td></tr>
<tr><td rowspan="3">Description: Poor funding to the livestock sector as it is overshadowed by well funded fertilizer and maize subsidy programs. Public spending on agriculture is low representing about 7-8 percent of the Government of the Republic of Zambia’s (GRZ) budget or 1 percent of GDP (2008). Between 60 and 70 percent of agriculture spending is on fertilizer and maize subsidies.
The livestock sector is strong with respect to animal health skills but short of essential field staff in animal husbandry or livestock development.</td><td colspan="4">Risk Management: Engage with the Government through the donor platform to encourage more balanced allocation of resources to the agricultural sector and reduce proportion of what is spent on fertilizer and maize subsidies.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Impl</td><td>Due Date : 06/30/18</td><td>Status: Not yet Due</td></tr>
<tr><td colspan="4">Risk Management: The project will support a comprehensive needs assessment and gap analysis to assist in reviewing all job description and identify training and additional specialized human resources needs of the Ministry. It will also support a defined training program including in-service training focusing on the technical fields, administrative and finance in the districts and camp (field) level.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Impl</td><td>Due Date : 06/30/18</td><td>Status: Not yet Due</td></tr>
<tr><td>Governance</td><td>Rating:</td><td colspan="3">High</td></tr>
<tr><td rowspan="2">Description: Poor coordination between districts and headquarters since priority in terms of funding is given to the central administration at headquarters. District and provincial activities are poorly resourced.</td><td colspan="4">Risk Management: Project will consider decentralized funding direct to the districts and provinces.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Impl</td><td>Due Date : 06/30/18</td><td>Status: Not yet Due</td></tr>
</table>

Project Risks				
Design	**Rating:**	**Low**		
Description: The Government may want a large project allocation to finance infrastructure under the planned Progressive Zoning Approach disregarding the targeted project focus areas. There is emerging consensus that options such as compartmentalization and progressive zoning would achieve the objective of a Disease Free Zone.	**Risk Management:** The Bank has had intensive discussions with Government on the merits of compartmentalization and progressive zoning measured against DFZ and the joint team has agreed on the current design which considers progressive zoning. The Ministry of Finance and National Planning has endorsed the project design. The project has allocated over 50 percent of the resources to on-farm related activities and value chain development. The Government has hired a consultant to carry out a cost benefit analysis of DFZ using the Project Preparation Advance to feed into the development of a long-term strategy for animal disease control. Government is also financing the DFZ activities using its own funding.			
	Resp: Client	**Stage:** Prep	**Due Date :** 06/30/12	**Status:** Completed
Social & Environmental	**Rating:**	**Moderate**		
Description: The quality and adequacy of safeguards analysis and familiarity with bank safeguards policy compliance is little known in the livestock sector. The Zambia Environmental Management Authority has a legal framework which requires Impact Assessments, public disclosures and mitigation measures before projects are implemented but the extent to which these are applied to livestock projects is unknown.	**Risk Management:** The project includes an ESMF, RPF and PMP which provide guidance on managing environmental and social impacts. The project will designate a safeguards specialist for the project who could function as the focal point and provide opportunities to fully interact with the Bank designated social and environmental safeguards specialists. The Safeguards specialist would also be responsible for in-country processing of safeguards instruments and compliance with the Zambian law.			
	Resp: Client	**Stage:** Impl	**Due Date :** 06/30/18	**Status:** Not yet Due
Program & Donor	**Rating:**	**Low**		
Description: There is a lack of complementarity between disease control under the IFAD Livestock Project and the proposed WB project. IFAD Livestock project is targeting control of specific cattle diseases in worst affected areas and does not have sufficient resources for a comprehensive control program of tick borne diseases.	**Risk Management:** Adopt best practices from the IFAD project and use the Livestock sector Donor Group to develop more useful synergies.			
	Resp: Bank/Client	**Stage:** Prep	**Due Date :** 06/30/12	**Status:** Completed
Delivery Monitoring & Sustainability	**Rating:**	**High**		
Description: The project area is large and there is a risk of resources being spread too thinly to have any significant impact on the ground. Inadequate funding from Government may result in delays and failure to	**Risk Management:** Government would be required to find resources for the funding gap and make advance commitments to provide resources for recurrent expenditure.			
	Resp: Client	**Stage:** Prep/Impl	**Due Date :** 06/30/12	**Status:** Not yet Due

implement activities with high counterpart and recurrent expenditure requirement and affect the pace of delivering results from the project.				
Overall Implementation Risk Rating: Substantial				

Annex 5: Implementation Support Plan

Implementation Strategy (IS)

1. **Project Design.** The design of the project has taken into account the risks posed by the under developed livestock services sector dominated by a poorly resourced Ministry of Agriculture and Livestock (MoAL) and takes a balanced approach to investments in the public and non-public sectors. The MoAL has very strong skills in animal health although numbers and skills themselves are insufficient at provincial, district and camp levels and insufficient skills in areas such as animal husbandry, livestock production and other specialized areas. The project will support capacity building in both the MoAL and non-public sector. Project activities will be implemented by both public servants and hired experts where public servants are unavailable. At the producer level, recognition is made of the existence of an increasing level of capacity outside the public sector which can be tapped and enhanced to provide implementation support. The project will promote the use of Community Livestock/Animal Health Workers to augment public sector capacity and adopt service delivery models that entail greater use of non-public sector service providers. The flexibility within the project design will allow specific project funded interventions to complement rather than compete with other stakeholder initiatives. Although investments in publicly owned livestock infrastructure will be financed by the project after a needs assessment, management of the infrastructure will be outsourced where appropriate and the operations and maintenance of the infrastructure will be applied on a cost recovery basis.

2. **Implementation.** The IS approach involves stakeholders at all levels. The animal disease control strategy brings together relevant specialists in this field and involves not only veterinarians but livestock specialists, planners, local authorities, producer/farmer organizations, service providers, community leaders and farmers. It is within the project design that once animal diseases are brought under control, the disease free status needs to be maintained by appropriate measures including implementing animal breeding and nutrition interventions to raise productivity. At the tail end of the implementation spectrum are the producers whose responsibility is to maintain healthy and productive animal herds within identified production systems. Implementation will involve Community Livestock/Animal Health Workers, livestock/veterinary assistants, private and public veterinarians and livestock officers and service providers. Project implementation will therefore cut across veterinary camps, district and provincial offices. However, Project Coordination Offices (PCOs) will only be established at the national as well as provincial offices.

3. **Monitoring and Evaluation.** The Bank will complement the client's M&E system through the biannual implementation support missions during which results indicators will be monitored. In addition the project will hire a consultant for the PCO.

4. **Environmental and Social Safeguards.** Implementation of the ESMF and RPF will entail rigorous screening of the site specific ESIA and RAP. The Bank will monitor their implementation with the participation of staff with the appropriate skills during supervision missions.

5. **Procurement.** Prior reviews will be conducted based on set threshold values for different procurement categories for Zambia. Annual post reviews will be conducted by procurement specialist and in addition the Zambia Country Office (CO) procurement specialist will be a member of the biannual implementation support missions.

6. **Financial Management.** Project will set up a Designated Account and a Sub-Control account for the project level activities and for the Livestock Improvement Grant Facility (LIGF) (see details in Annex 3 Section II. A. Financial management). Financial management will be monitored closely by a field based Bank Financial Management Specialist.

Implementation Support Plan (ISP)

7. A draft Project Implementation Support Plan (ISP) has been prepared. Table A5.1 below indicates support to implementation during the project period.

Table A5.1 – Implementation Support Plan

Time	Focus	Skills	Resource Estimate (US$)	Partner Role
First 12 months	Community mobilization, training and identification of Community Livestock/Animal Health Workers. Identification of Service Providers, Veterinarians. Preparing and tendering for Livestock Service Center infrastructure, laboratories. Identification and appointment of a Grants Administrator	TTL/Consultant Veterinarian/Livestock Production Specialist Agribusiness Specialist Environmental. Safeguards Specialist Social Safeguards Specialist/Gender Procurement Specialist FM Specialist M&E Specialist	200,000	*Provide oversight and coordination role*
12-48 months	Ensuring that project implementation is rated Satisfactory towards achieving PDO. Organizing the mid-term review to draw lessons from project implementation	TTL/Consultant Veterinarian/Livestock Production Specialist Agribusiness Specialist Environmental Safeguards Specialist Social Safeguards Specialist/Gender Procurement Specialist FM Specialist M&E Specialist	400,000	*Provide oversight and coordination role*
48-72 months	Ensuring that lessons learned from MTR are implemented	TTL/Consultant Veterinarian/Livestock Production Specialist	240,000	*Provide oversight and coordination*

	through an action plan and that project continues to be rated Satisfactory towards achieving its objectives.	Agribusiness Specialist		*role*
		Environmental. Safeguards Specialist		
		Social Safeguards Specialist		
		Procurement Specialist		
		FM Specialist		
		M&E Specialist		

Table A5.2: Skills Mix Required

Skills Needed[36]	**Number of Staff Weeks per annum**	**Number of Trips**	**Comments**
Team Leader (TTL)	24	6 Field visits	CO based
Veterinarian/Livestock Production Specialist	6	4, Field visits	Co TTL function, Nairobi based
Procurement Specialist	4	2-4 Field visits	CO based
Financial Management Specialist	4[37]	2-4 Field visits	CO based
Disbursement Specialist	2		HQ based
Lawyer	1		HQ based
Team Assistant	12	2 Field visits	CO based
Operations Specialist	4	2-4 Field visits	HQ based
Agribusiness/ Management Specialist	2	2-4 Field visits	Consultant
Environmental Specialist	2	2-4 Field visits	Pretoria based
Social Specialist/ Anthropologist/Gender	2	2-4 Field visits	Kampala based

Table A5.3: Role of other Partners

Position	**Institution/Country**	**Role**
Project Coordinator, National Coordination Office (NCO)	Agricultural Development Support Project (ADSP), Ministry of Agriculture and Cooperatives (MACO)	Liaison for the ADSP-NCO
M&E Specialist	ADSP NCO, MACO	Provide M&E support to LDAHP
Safeguards Specialist	ADSP NCO, MACO	Provide Safeguard support to LDAHP
Project Coordinator - IDSP	MACO	Liaison with Irrigation project
Chairman	Veterinary Association of Zambia	Coordination and participation of private vets in the implementation of the sanitary mandate
Executive Director	Zambia National Farmers Union	Representation of farmers and different value chains
Coordinator	Agricultural Consultative Forum	Value chains and farmer categorization

[36] Some skills may reside with one or more team members. Team members will be sourced through project and / or FAO-CP funds; additional TF support would be sourced if needed.

[37] Flexibility is to be retained if additional staff weeks (and at different levels of expertise) is required.

	(ACF)	
Project Coordinator	IFAD Smallholder Livestock Investment Project	Coordination on strategies for ECF and FMD control
Focal point	Wildlife Producer Association of Zambia (WPAZ)	Collaboration on climate resilient diversified products – game ranching

Annex 6: Economic and Financial Analysis

1. This economic and financial analysis of LDAHP employs a variety of methods because the project comprises a mix of investments in service delivery, capacity building, infrastructure and demand driven matching grants. In particular, the analysis is based on rate of return analysis on likely models for smallholder livestock enterprises, modeling of the economic impact of animal disease control, and overall break even rate of return analysis on the total project investment.

2. This annex is structured as follows: (i) an overview of the possible economic benefits of the program; (ii) a brief discussion of the general issues related to economic analysis of livestock projects including evidence of returns in similar projects in Africa; (iii) an analysis of expected returns to project investments in animal health interventions with a focus on diseases of national economic importance; (iv) financial analysis of expected returns to the project's investments in productive infrastructure and matching grants; and (v) an estimate of the parameters required to achieve an overall break even rate of return for the project.

3. Based on assumptions of disease prevalence and the potential to increase animal productivity based on the variety of project interventions, it is estimated that: a) an overall project break even rate of return of 12 percent could be achieved if component investments could reduce animal mortality by 10 percent; b) investments in livestock service centers have the potential to break even if sites are carefully selected based on livestock numbers in the vicinity and if; c) productive investments, through matching grants, are profitable and have longer term benefits of generating demand for privately provided services. The parameters for break even rate of returns are considered achievable based on the current project design. Project vaccination coverage targets are expected to reduce animal mortality by the required break even rate and current MoAL investments in livestock service centers already demonstrate the required level of animal coverage to break even. During implementation, matching grants will require cost benefit analysis for each specific proposal to ensure financial viability.

Expected Benefits of LDAHP

4. The livestock sector in Zambia is relatively unexploited but recognized as an increasingly dynamic part of the agricultural economy. While livestock contributes 35 percent to agricultural value-added, provides essential food products and helps sustain food production, productivity is low, plagued by underinvestment, poor farm management and by unacceptable losses as a result of animal diseases of economically significant importance, e.g., transboundary diseases such as FMD, contagious bovine pleuropneumonia (CBPP) and New Castle Disease.

5. Livestock productivity in Zambia is significantly affected by a number of animal diseases. Major productivity losses result from animal mortality but these are exceeded by morbidity-induced losses from the non-fatal disease (such as FMD where morality losses are much less than for CBPP and tick borne diseases). Economic costs from diseases also stem from Government control measures to restrict disease transmission, such as animal movement controls which restrict animal movements within the country, thus raising the

"cost of doing business" in many cases. These costs can be substantial because of the fragmented nature of the ruminant chain where animals are often moved extensively for breeding, feeding, and grazing.

6. Livestock productivity is also relatively low in the smallholder sector due to farm management practices which are characterized by limited use of supplemental feed and improved genetic stock. Artificial insemination (AI) and other livestock services are not easily available to many smallholders. Even considering some of the existing genetic potential, yields are below potential, e.g. milk production for smallholder producers with cross breeds is often below what could be achieved with improved feed management. Smallholder cattle sales show live animal and carcass weight at levels much lower than commercial producers and are an indication that limited fattening occurs prior to sale.

7. The primary economic benefit from LDAHP is expected to be generated by an improvement in livestock productivity among project beneficiaries as a result of reductions in the incidence of animal diseases and improved livestock management and marketing services. In particular, productivity gains are expected to be generated by:

- *Reduction in animal mortality and morbidity*. Project investments are expected to increase vaccination coverage and improve disease management which is expected to substantially reduce animal mortality and morbidity. CBPP, a highly infectious transboundary disease of national importance, can cause mortalities as high as 50 percent among cattle and severely reduced productivity among 40 percent of the surviving stock. Reduced mortalities and lower incidences of animal illnesses will have the following productivity impacts: (i) improved yield of milk, meat or eggs since disease has a negative impact on yield and weight gain; (ii) increase in overall production due to reduction in mortality; (iii) increased calving rates as a result of reduced morbidity; and (iv) increase in crop productivity as result of increased availability of animal traction.

- *Improved access to services and market linkages*. Project investments in productive infrastructure and matching grants are expected to increase the availability of livestock related services (artificial insemination, veterinary and other advisory services) and improve market access through market related infrastructure and enterprise investments and through livestock service centers. Enhanced farm management and better linkages in identified value chains should also increase productivity. Productivity gains are expected in the form of improved yield of milk, meat or eggs as a result of the use of improved breeds and/or feed management; and (ii) increases in the volume of sales and possibly prices as a result of better market access (market infrastructure, group marketing sites) or enterprise investments.

Table A6.1 Households and Agricultural Activity by Province

	Households Reporting		Crop-growing		Livestock Rearing		Poultry Rearing	
Province	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Central	118,932	100%	116,607	98%	48,894	41%	88,227	74%
Cooperbelt	73,004	100%	70,460	97%	11,509	16%	36,237	50%
Eastern	258,496	100%	256,088	99%	127,153	49%	173,736	67%
Luapula	148,647	100%	147,368	99%	33,301	22%	92,035	62%
Lusaka	26,943	100%	26,315	98%	10,231	38%	17,613	65%
Northern	203,229	100%	200,909	99%	76,428	38%	146,275	72%
North-western	75,235	100%	74,112	99%	18,456	25%	32,551	43%
Southern	151,512	100%	150,943	100%	91,772	61%	111,711	74%
Western	137,004	100%	135,904	99%	42,462	31%	74,332	54%
Zambia	**1,193,002**	100%	**1,178,706**	99%	**460,206**	39%	**772,717**	**65%**

8. *Expected project beneficiaries*. Approximately 65 percent of rural households in Zambia, or approximately 780,000 households, are reported to raise poultry and 38 percent (approximately 500,000 households) to hold large animals (see Table A6.1). The beneficiaries of the project will include about 390,000 households in the project targeted areas of 52 districts in the project's proposed area of Southern, Western, Eastern, and Central provinces. These provinces include a human population of approximately 5.4 million (of 13 million) and a cattle and small ruminant population of 1.5 million and 600,000 respectively.

9. *Indirect livelihood benefits***.** The project is also expected to generate a number of indirect benefits. By improving productivity, project investments are securing an important source of income for a large number of rural farm households which in turn generates additional social benefits in the form of increased consumption. The availability of livestock products will also increase own consumption and nutrition for producers. Broader economic benefits to disease control include spill-over effects on feed industries which benefit from more animals and increased feed demand, consumers through relatively lower meat prices as supplies increase, and veterinarians/ animal health workers and veterinary drug providers who would expect higher demand for their services/products.

Table A6.2: Animal Inventories in Project's Impact Area

Province/species (no.)	Cattle	Sheep	Goat	Poultry* (1,000)	Human population	HHs with cattle
Southern	684,406	29,495	341,053	4,337	1,606,793	56,292
Western	447,802	na	25,920	2,886	881,524	50,421
Eastern	306,668	18,053	177,932	6,745	1,707,731	54,014
Project coverage	**1,438,876**	**47,548**	**544,905**	**13,968**	**4,196,048**	**160,727**
Central (4 districts)	149,125					
Total	**2,885,000**	**200,000**	**2,00,000**	**30,000**	**13,046,508**	**230,967**

Issues in Ex ante Economic Analysis of Livestock Projects

10. Measuring the quantitative benefits of livestock productivity gains requires assessing the impact on the value of animal assets, the value to the households and to the economy. It is generally agreed that productivity improvements in livestock production can have significant economic benefits in developing countries because income elasticities of demand for livestock products are high relative to other major food groups.

11. ***Challenges to measuring quantifiable benefit streams related to disease control***. Ex ante economic analysis of livestock projects is complicated by a number of factors including the complexity involved in modeling changes within livestock populations due to animal health interventions or changes in production systems. Analysis of the "without"/ "with" impact of the animal disease control activities on the ruminant sector requires developing a herd model which projects the herd evolution over a 20-year period because increased productivity due to reduced impact of diseases has a progressive impact on herd development. It requires ex-ante assumptions about the number of disease outbreaks, mortality levels, and disease response. It also assumes knowledge about the technical parameters of production (mortality rates, calving rates, milk yields, lactations rates) as well as the use of livestock in the household which influences livelihoods, e.g. livestock's input in the cropping system though animal traction and manure.[38]

12. Availability of data also presents additional challenges and can undermine the robustness of any quantitative cost-benefit analysis of disease control, "without" or "with" project interventions. Lack of good data on disease outbreaks complicates the measuring of impact against a counterfactual. Measuring the costs of disease outbreaks is clouded by disease reporting systems which don't adequately measure the incidence (or disease level) of actual outbreaks, e.g. the actual number of animals affected by outbreaks. Meanwhile, the lack of timely and accurate livestock data, in terms of actual animal numbers, their distribution and the technical parameters which characterize different production systems, limits the ability to clearly identify the potential benefits of disease control.

13. Clearly stating the "with" project impact of enhanced disease control also assumes that any investments in public infrastructure designed to improve disease control is accompanied by effective service delivery mechanisms. Also the benefit of animal health controls, in particular for ruminants, needs to be evaluated over a period considerably longer than the project since enhanced productivity and higher calving rates leads to a restructuring of the herd.

14. ***Estimating net benefits resulting from animal disease controls – evidence from other countries***. A preliminary review of the literature reveals ex-ante assessment of returns to livestock disease control and returns to livestock R&D are significant[39] and usually

[38] CFU reports that one tone of manure has roughly the same nutrients as a 25 bag of compound fertilizer which in 2005 sold for around ZMK 100,000 ($21)

[39] Taking the negative effect of animal diseases into account implies that estimations of the ROR on both animal research and animal disease controls are underestimated. In South Africa, Townsend and Thirtle estimated that returns on animal research were under-estimated by nearly 50 percent, with ROR of 18% revised upward to 35% ("Is livestock research unproductive? Separating health maintenance from improvement research"; Townsend, Thirtle, 2001.

underestimated because ex-ante analysis assumes that without intervention, there would be no change in output or productivity. In fact, without intervention and particularly for the ruminant sector, disease outbreaks, given the complexity of the breeding cycle, have long term adverse impacts on the herd structure and returns to households. Obviously the overall impact on returns depends on the targeted populations, the current disease status, nature of the interventions, and the technical assumptions related to the impact, such as reduced morality/morbidity, improved animal fertility and health.

Economic Impact of Investments in Animal Disease Control

15. ***Modeling disease impact in the ruminant sector***. A very preliminary analysis of the impact of disease control of FMD and CBPP in Zambia, looking at a sample herd of 6,000 animals, reveals that improved health services results in progressive lower mortalities (between 1 and 5 percent) and increased calving rates at 60 percent compared to 50 percent. Over a cumulative 20-year period[40] this translates into increased live weight of animals (estimated at 36 tons) and increased milk production (26,000 litres). Under this scenario, it is assumed that two outbreaks occur over the duration of the project (not distinguishing between FMD/CBPP).

16. Translating these gains into quantitative benefits uses indicative output prices for meat and milk and places a value on the incremental value of the capital assets. In this case, over a 20-year period, the incremental increase in output (meat and milk) generated by an original herd of 6,000 animals equates to nearly US$65,000 while the assessed increase in the value of the herd (assuming average weights of 150 kg) is approximately US$390,000 (or US$20,000/year). If this is extrapolated to include half of animals in the total project area (700,000 head), the potential undiscounted project gain over 20 years could reach US$85 million (or an estimated US$4 million/yr). Some of assumptions incorporated into this framework are listed below.

Table A6.3: Assumptions for Modeling Disease Impact

Disease model	**FMD**	**CBPP**
Disease model - probability of disease outbreak in any one year	50% (or once every two years)	50% (or once every two years)
Number of animals affected (died/vaccinated) (2010)	5478 (17/22,985)	82 (36/427,916)
Vaccination coverage (current and under the project)	25% in Western moving to overall 40% but 100% of dairy and oxen in the province/possibly feedlots	84% vaccination to 95%

[40] To effectively quantify the economic impacts of enhanced productivity in the large ruminant sector (cattle), the cumulative impact has to be calculated over a 20-year herd modeling period, thus reflecting the biological factors characterizing the cattle cycle.

Disease model	FMD	CBPP
Disease impact: mortality	1% - 5% - 8% mortality from FMD	30% - 50% in affected herds
Productivity loss from disease by type of cattle dairy cow)	Loss of 100% milk production for 2-3 months (25% of the year) 660 liters per year - loss 120 liter/cow affected	Loss of 100% milk production for 2-3 months (25% of the year) 660 liters per year - loss 120 liter/cow affected
Productivity loss from disease by type of cattle (oxen - loss of days)	2-3 months (90 days) of draft power (need estimate of renting animals)	2-3 months (90 days) of draft power (need estimate of renting animals)

17. ***Livelihood gains from vaccinating for New Castle Disease (ND)***. Assessing the incremental benefits from vaccinating for ND is much more straightforward that that of other diseases since the production cycle for poultry is less complicated. Mortality rates are relatively high for ND and in the following analysis; it is assumed that disease outbreaks happen every two years with mortality of 40 percent. To facilitate the analysis, it is assumed 20 percent mortality in one year. Given an assumption of approximately 14 million birds in the project area (see Table A6.2), the value of the loss birds (2.8 million) is estimated at approximately US$13 million. The relative gains of different levels of vaccination are assessed in Table A6.3, showing that there is not a linear increase in gains from vaccination due to the reduced incidence of disease with higher levels of vaccination.

Table A6.4: Financial Gains from Vaccinating for Newcastle Disease

Vaccination level (%)	Mortality w/o vaccination (1000 birds)	Reduced mortality with x % vaccination	Value of birds (1000 kw)	Value of birds (1000 US$)
No vaccination	2,794			
10%		531	11,677,312	$ 2,433
20%		1,006	22,125,433	$ 4,609
40%		1,788	39,334,103	$ 8,195
50%		2,095	46,094,652	$ 9,603
100%		2,794	61,459,536	$ 12,804
Value of bird losses	61,459,536			

*Assumes one outbreak every two years, 40 percent mortality , 20 percent/yr

** probability of disease transmission lowered 1% as 1 % more birds vaccinated

*** market price of a bird = 22,000 kwacha (US$4.5)

18. This implies that optimal vaccination coverage, from a broader economic perspective, is not necessarily 100 percent but needs to be considered within the context of probability of disease outbreaks. This is visually depicted in Figure 1 which shows the reduction in mortalities based on changing vaccination levels. This figure also presents the results of a simple simulation (Table A6.5) which reviews the value of gains under different scenarios: 1) changing the incidence of disease to 10 percent, and 2) changing the value of bird to account for the different value of birds in the flock. The previous analysis used a representative market price of a village chicken.

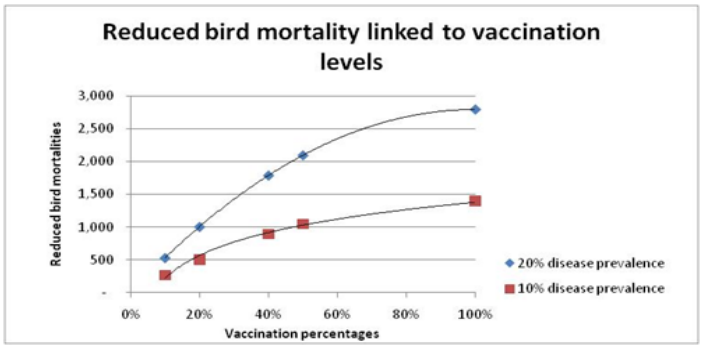
Table A6.5: Sensitivity Analysis: Changing Incidence of Disease/Value of the Birds

Vaccination coverage	# birds (reduced mortality)		Total Value of Birds (1,000 kwacha)		Value of Birds (1,000 US$)	
	Assuming 20% ND mortality	Assuming 10% ND mortality	Assuming 22,000 kwacha/bird	Assuming 11,000 kwacha/bird	Assuming $4.58/bird	Assuming $2.29/bird
0%	(2,794)	(1,397)				
10%	531	265	11,677,312	2,919,328	2,433	608
20%	1,006	503	22,125,433	5,531,358	4,609	1,152
40%	1,788	894	39,334,103	9,833,526	8,195	2,049
50%	2,095	1,048	46,094,652	11,523,663	9,603	2,401
100%	2,794	1,397	61,459,536	15,364,884	12,804	3,201

19. Using a lower rate of disease incidence that results in only 10 percent mortality per year, a zero vaccination rate scenario would result in the bird losses of an estimated 1.4 million (valued US$3 million). A similar simulation as above assessed the value of birds losses for various vaccination levels.

20. Based on the above analysis, it is expected that the incremental gains from vaccination over a no vaccination base case could range from gains of US$608,000 (assuming a reduction of bird mortality of 265,000 birds due to increasing vaccination coverage to 10 percent) to US$13.8 million (assuming 100 percent vaccination coverage) under a scenario of higher bird prices and 20 percent disease incidence. The project will target moving from zero percent vaccination rates in project areas to 40 percent by project end. This would result in incremental gains of approximately US$2 million to US$8 million gain per year depending on the level of mortality rates associated with ND (10 percent vs. 20 percent).

Figure A6.1: Losses at various levels of vaccination



Financial analyses of the investment in Livestock Service Centers:

21. The project includes numerous activities which can generate returns for a variety of project beneficiaries. Under Component 2 "Productive Investment and Access to Services for Producers and Organizations", the project under sub-component 2.1 directly targets service provision and productive investment to producers and associations through demand-driven public investment in Livestock Service Centers[41]. It is proposed that the project fund approximately 106 Tier I LSC, located at the sub-camp level (US$10,000/center), 51 Tier I +, again at the sub-camp level (US$33,200), 26 Tier II (US$124,2000/center), and 2 Tier III (US$354,000/center) centers at a total cost of approximately US$8.4 million.

22. This analysis provides an assessment of the numbers of animals which have to be serviced through the centers to break-even and cover the initial cost of investment. Given that the project will cover approximately 457 veterinary camps (out of a national total of over a 1,000) with average animals numbers of 3,000/camp (6,490/camp in the Western province and 4,278/camp in the Southern Province), the Centers, particularly Tier 1 and Tier 1 + centers constructed in densely populated areas, have the potential to break-given. The three scenarios all assume an increase in basic animal health services which target a reduction in mortality of 5 percent and the first two scenarios provide varying degree of support for marketing. Interventions which support livestock marketing provide the greatest returns and, in fact, the following example shows that the returns on investment in Tier I Livestock Service Centers (LSCs), estimated at approximately 50,000,000 kwacha (US$10,000), can be covered by one extensive cattle operation of less than 100 cattle (supported also by the break-even analysis). This analysis assumes that all productivity gains are a direct result of project interventions.

[41] Tier 1 provides minimum investment in infrastructure such as holding pens, a dip tank and crush pens for vaccination with Tier 1+ including also a water reservoir, a dip tank or spray race and a pump for the well. Tier 2 includes an office for the veterinary camp officer and Tier III (to be located more centrally) includes a training center.

Table A6.6: Break Even Analysis of Livestock Service Centers

Scenario 1: Reducing mortality by 5% and increasing marketing of animals (25% of herd))					
	Break-even animals	**# animals marketed**	**Value in reduction in mortality**	**Increased value of sales**	**Cost of centers**
Per Center				**(1,000 kwacha)**	
Tier 1	85	21	8,415	66,300	**74,715**
Tier2	625	156	61,875	487,500	**549,375**
Tier 3	1,700	425	168,300	1,326,000	**1,494,300**
Scenario 2: Reducing mortality (5%)and slight increase in marketing (5% of herd)					
	Break-even animals	**# animals marketed**	**Value in reduction in mortality**	**Increased value of sales**	**Cost of centers**
				(1,000 kwacha)	
Tier 1	295	15	29,205	46,020	**75,225**
Tier2	1,950	98	193,050	304,200	**497,250**
Tier 3	5,900	295	584,100	920,400	**1,504,500**
Scenario 3: Reducing mortality (5%)and no increased marketing					
	Break-even animals	**# animals marketed**	**Value in reduction in mortality**	**Increased value of sales**	**Cost of centers**
				(1,000 kwacha)	
Tier 1	750	0	74,250	0	**74,250.0**
Tier2	5,100	0	504,900	0	**504,900.0**
Tier 3	15,200	0	1,504,800	0	**1,504,800.0**

23. Without an emphasis on livestock marketing, the same center would need to service 500 animals and above to break-even (in one year), assuming that extension training and access to regular dipping service to control East Coast Fever, a disease which results in high mortality/morbidity, leads to a 5 percent reduction in mortality. The infrastructure for vaccination and dipping services as well as rudimentary marketing facilities including scales and holding pens can result in favorable returns in situations where producers adopt improved feeding and practices through better pastoral management, use of hay, technical advice; improved animal health (dipping infrastructure, vaccination), improved marketing, in particular the 90 day fattening of young calves before sales.

24. Current coverage under existing livestock service centers indicates that the break even threshold of animals – 750 – is realistic. Livestock service centers visited under preparation had more than 800 animals.

25. ***Calculating returns from cattle feeding linked to a livestock service center***. Production costs, incomes and gross margins have been calculated on a 100 cattle operation, based on assumptions of reduced mortality through better management and increased yields, for both milk and marketed young fattened animals (see Table A6.7 below). It is assumed that a more

rational marketing of animals and better management results in annual herd growth of 2 percent, compared to non-intervention growth of 0.4 percent. The largest returns on investment come from increased marketing of fattened young steers, with estimated off-take increasing to 85 percent of young animals by the end of the project and average slaughter weights increasing from 180 kg to 220 kg/animals.

26. Intensive feeding over a 90 day period should result in approximately 17 quality steers (compared to 8 of lower quality) being marketing annually at premium prices resulting in a gross incremental income stream of approximately US$9,000 per year (See Table A6.10 in the Appendix). Taking out the additional costs of supplemental feeding and the procurement of veterinary services[42], the average gross margin/animal is estimated at US$42 which includes not only the returns from marketing quality, better fed animals but also the increase in capital stock of animals as a result of lower mortality (down 5 percent) as well as an increase in milk yields as better feeding extends lactation periods and allows more female animals to be in-milk. The internal rate of returns calculated for this operation which groups an association of 10 producers is 16 percent.

Returns to other Productive Investments in the Project

27. LDAHP has allocated approximately US$15 million of the IDA allocation under the second component for productive investments under a competitive matching grant mechanism. Forecasting and quantifying actual benefits for potential investments under a competitively-managed matching grant process will only be possible once specific enterprises are identified or accepted. However, indicative enterprise models (see Table A6.11 in Appendix) were identified through a pre-project stakeholder workshop and the financial returns of these possible investments were analyzed. The expected enterprise models include: (i) productivity improvements in specific farm enterprise models, such as in the beef, poultry, and pig sub-sectors; (ii) new or expanded livestock agro-businesses/enterprises; and (iii) expanded and improved livestock service delivery. The following Table A6.7 reviews various options along the chain which were reviewed with stakeholders during a two day workshop (February 11-12,' 2011).

28. The farm level models identified for potential funding include: pig fattening, broiler and layer production, cattle fattening, and smallholder dairy production (2 cows for members of an established association). The analysis of these investment packages are based on current prices as derived from discussions with stakeholders; these include the costs of animals, inputs for construction, feeding, and animal health services. Investment costs covered by the matching grant include: (i) in some cases, the construction costs or improvement of a building (in other cases, these were considering part of the counterpart funding); (ii) procurement of necessary equipment and materials; (iii) working capital requirements corresponding to the first cycle of production; and(iv) training and technical support for project follow-up. This technical support, estimated at 2 days/month, ranges between 5-10 percent of overall investment costs.

[42] Assumed to be supplied through the Herd Health Plan which provides vaccination and routine preventative services, including dipping, for 79,000 kwacha/animal/yr (US$16/animal).

29. The costing of the individual grant project options listed above is preliminary and subject to change depending on the locality/adjustment of unit prices. The matching grant costs of the interventions range between US$4,000 (for a two-cow dairy operation), up to US$60,000 for a milk collection center which houses a 2,000 litre milk cooling tank and other equipment. Counterpart contributions are expected to constitute at least 25 percent of the total investment costs and in the case of poultry/pig operations, this should include the construction of a shed. All investments assume individual ownership of the animals.

30. The returns on the above investment packages are only indicative and detailed financial analysis of the interventions will be required when the demand–driven individual grant proposals are submitted by stakeholders. Assuming that existing associations of at least 10 members qualify for the grant, the potential number of beneficiaries (including HH members) under a US$15 million investment ceiling could range between 40,000-60,000 household members. This conservative estimate is not allowing for eventual spillover benefits arising from wider adoption of project-supported technologies, improved management as well as the indirect benefits of increased input demand and higher available supplies.

Table A6.7: Returns on Investment

Financial analysis of possible investment packages under the matching grant							
Type of project	**Unit**	**Broiler (1,000 birds)**	**Layer (500 birds)**	**Pig farrowing/ fattening (10 sows/1 boar)**	**2-cow dairy operation**	**Cattle fattening (50 steers)**	**Milk Collection Center**
Direct beneficiaries	no	10	10	10	1	10	30
Investment costs	US$	$10,705	$15,802	$11,585	$4,011	23,844	$58,063
Financing per beneficiary							
Grant per beneficiary *	US$	$1,071	$1,580	$1,159	$4,011	$2,384	$5,806
Project matching grant	US$	$100	$42	$141	$1,042	$729	$194
Financial analysis							
Annual sales	US$	$4,552	$21,786	$16,958	$2,754	$53,083	$316,800
Annual expenses	US$	$3,243	$15,353	$15,098	$1,922	$39,768	$310,509
Annual gross margin	US$	$1,309	$6433	$1,861	$832	$13,315	$6,291
Gross margin (income/variable costs)	%	36%	23%	12%	43%	33%	2%
Internal rate of return	%	21%	30%	28%	21%	26%	-11%

* Grant includes capital and operation costs for one year and includes multiple cycles of production for broilers and pigs.

31. For farm level enterprise investments under the matching grant process that have quantifiable benefit streams, the estimated aggregate IRR is about 26 percent (excluding milk collection centers). This is higher than the opportunity cost of capital (estimated at 12 percent), making most of these investment economically viable. However, the rate of return varies between enterprises, between 21-30 percent, with the exception of milk collection centers. Income streams for these enterprises were estimated using technical parameters of production which assume farmers adopt cost-efficient production methods which enhance

feed conversion and reduce animal health risks. In addition, individual ownership of all the animals is assumed. Each investment package is supported by a "herd health plan", the veterinary services of which should be provided by private sector, if available.

32. While the project hopes to target more value-added activities down the value-chain, such as milk collection centers (MCCs), meat/dairy processing, hatcheries, and potentially small-medium sized abattoirs, economic viability becomes more problematic due to the high cost of equipment. This is highlighted by the negative IRR for a milk collection center where gross incomes are estimated to only marginally cover variable costs and yield an IRR of 11 percent (see Table A6.8). These results are corroborated by the literature on dairy production in Zambia where most of the capital investment originates from donors and the high cost of milk transport combined with small margins between the sale and the purchase price of milk erodes enterprise profitability. It is estimated that an MCC with less than about 200,000 liters annual turnover is likely to make a financial loss due to the high fixed operating costs and expenses of milk delivery.[43] Although conditions can vary greatly, this minimum turnout is roughly equal to a minimum of 105-one-cow dairy farmers delivering milk each day. The challenge is to generate the kind of volumes needed to cover the cost of milk bulking, implying that MCC investment needs to be supported by investments in supply, e.g. dairy production. This analysis assumes that the seasonality to milk production limits deliveries to only 7 months of the year. Assuming that supplies were generated year-round and the cooler is at full capacity, the IRR moves from 8 percent to 37 percent.

Parameters Required to achieve a Break Even Rate of Return

33. A minimum break even rate of return was calculated to determine the combination of beneficiary coverage, productivity increases, and reductions in disease incidence that would be needed to justify investment costs of the entire project. Two types of break even analysis were done to address the different types of project investment in disease control and productivity.

34. **Component 1 Investments in Disease Control**. Based on the overall project investments in disease control under component 1, the analysis assessed the level of impact in required to generate a break even rate of return of 12 percent. A simplified model was used with quantifiable benefits derived from the value of the incremental increase in herd size assuming a constant real value for live animals, and the value of incremental increased milk production as a result of reduced morbidity. Three scenarios were tested: (i) a reduction in the isolated but chronic outbreaks of disease that occur every year within Zambia; (ii) prevention of large scale outbreaks that results in significant mortality up to 2 percent of the entire herd; and (iii) a combination of the previous two - reducing chronic mortality/morbidity associated with DNEI as well as reducing the probability of a large scale outbreak.

35. For the first scenario, component investments would need to reduce mortality by 10 percent per year for the last five years of the project in order to achieve a break even rate of return. Under the second scenario, where prevention of a large scale outbreak is the main parameter that is adjusted, the probability of a large scale outbreak would need to be significantly reduced from 25 percent to 10 percent to achieve a minimum rate of return. In

[43] Zambia: Case Study of Smallholder Dairy, John Keyser, May 2008 (unpublished).

the last scenario, a break even rate of return requires a 5 percent reduction in mortality per year during the project and a reduction in the probability of disease by half. Sensitivity analysis shows the parameters relatively more sensitive to lags in benefits than higher costs however, a combination of the two has significant impact as well. The minimum disease control impacts from all would result, assuming cattle numbers of 1.5 million and a dairy herd of 30,000, in an incremental increase in the herd of between 97,000 to 112,000 animals, over a 20 year cattle cycle, above a normal growth scenario without the project.

36. Current estimates of disease prevalence in the LDAHP project area are 60 percent for ND, 15 percent for CBPP and 10 percent for FMD, which are targeted to decline to 40 percent, 10 percent and 7 percent respectively by project end. Although data on disease prevalence and herd sizes is not fully available, the expected decrease in disease prevalence and assumptions on herd size made here would be sufficient to achieve the break even rate of return. There are no estimates on large scale disease outbreaks, which makes it difficult to assess the feasibility of assumptions, however, it is also believed that reducing the probability of large outbreaks are reasonable.

Table A6.8: Disease Control Impacts required for Break Even Rate of Return

	Reduction in chronic mortality and morbidity	**Prevention of large scale disease outbreak (FMD) only**	**Reduction in mortality and morbidity and prevention of large scale disease outbreak**
Scenario	Primary benefit generated by reduction in the number of isolated outbreaks that cause chronic low level mortality	Primary benefit generated by reduction in the probability of large scale disease outbreak with high mortality (such as FMD) but assuming chronic low level outbreaks persist	Primary benefit generated by reduction in probability of large scale disease outbreak and reduction in chronic low level outbreaks
Minimum break even parameters to achieve 12% rate of return	Component investments would need to achieve: • 10% average annual reduction in mortality for years 2 to 6 of project, which would bring overall DNEI herd mortality from 0.8% to 0.46% by project end (analysis assumes it remains stable at that level thereafter) • Reduction in mortality results in an incremental increase in animals equal to approx. 17,000 animals over first six years of project and 112,000 by end of 20th year	Component investments would need to achieve: • Reduction in probability of large scale outbreak (one that results in mortality of 2% of herd) from 25% to 10% - reducing probability from 1 in every four years to one in every 10 years • Reduction of probability of outbreak results in an incremental increase in animals equal to approx. 23,000 animals over first six years of project and 97,000 by end of 20th year	Component investments would need to achieve: • Reduction in mortality from DNEI in year 2-5 of project by 5% per year to bring overall DNEI herd mortality to 0.62% by project end • Reduction in probability of large scale outbreak from 25% to 13% - reducing probability from 1 in every four years to one in every 7.7 years • Reductions would result in an incremental increase in animals equal to approx. 20,000 animals over first six years of project and 103,000 by end of 20th year

37. **Minimum productivity increases required from project investments.** A second set of analysis was undertaken to assess the minimum level of productivity increases and beneficiary coverage that would be required for a 12 percent rate or return on project investments. The analysis tested the parameters using overall project investments and component 2 investments alone. Two beneficiary scenarios were also used: a high case,

which assumed 25 percent of the livestock producers and 10 percent of poultry producers in the project area derived benefits; and a low case, which reduced the beneficiary number by half. Total number of livestock producers in the project area is estimated to be approximately 880,000 individuals.

38. The analysis used a without project scenario that assumed growth in livestock GDP based on recent IFPRI analysis of projected sub-sector growth rates in Zambia. Based on low and high beneficiary coverage scenarios the minimum incremental productivity increase that should be achieved by the project would range from 3.9 percent to 1.4 percent. Sensitivity analysis to test whether an increase in project costs or a lag in benefits indicate that a higher productivity rate would be required to generate the break even rate of return as expected – ranging from 4.6 percent to 5.3 percent per farmer in the low beneficiary case and the 2.4 percent to 2.6 percent per farmer for the high beneficiary case.

39. The minimum required productivity gains are low enough to be considered achievable. Beneficiary coverage under the project is currently estimated at around 340,000 – which is within the minimum range established by the analysis. Thus the project is considered likely to meet the minimum productivity gains required for a break even rate of return.

Table A6.9: Minimum Productivity Gains Required for Break Even Rate of Returns

	High beneficiary case	**Low beneficiary case**
Scenario	Minimum increase in value added per livestock worker required assuming relatively high beneficiary coverage by project	Minimum increase in value added per livestock worker required assuming relatively low beneficiary coverage by project
All project investments		
Minimum break even parameters to achieve 12% rate of return	Project investments would need to achieve: • Direct beneficiary coverage of 25% of livestock rearing population in project area – approx. 245,000 farmers and 10% of poultry producers: 141,0000 farmers • Minimum incremental productivity increase within the group would need to be 1.4% per year sustained over time	Project investments would need to achieve: • Direct beneficiary coverage of 12.5% of livestock rearing population in project area – approx. 122,000 farmers and 5% of poultry producers - 70,000 farmers • Minimum incremental productivity increase within the group would need to be 3.9% per year sustained over time
Sensitivity analysis – lag in benefits by 2 yrs	• Minimum incremental productivity increase of 2.4% per year	• Minimum incremental productivity increase of 4.6% per year
Sensitivity analysis – 20% increase in costs	• Minimum incremental productivity increase of 2.3% per year	• Minimum incremental productivity increase of 4.7% per year
Sensitivity analysis – lag in benefits by 2 yrs 20% increase in costs	• Minimum incremental productivity increase of 2.6% per year	• Minimum incremental productivity increase of 5.3% per year
Component 2 investments only		
Minimum break even parameters to achieve 12% rate of return	Component investments would need to achieve: • Direct beneficiary coverage of 25% of livestock rearing population in project area – approx. 245,000 farmers and 10%	Component investments would need to achieve: • Direct beneficiary coverage of 25% of livestock rearing population in project area – approx. 245,000 farmers and 10%

	High beneficiary case	Low beneficiary case
	of poultry producers: 141,0000 farmers • Minimum incremental productivity increase within the group would need to be 1.1% per year sustained over time	of poultry producers: 141,0000 farmers • Minimum incremental productivity increase within the group would need to be 1.4% per year sustained over time
Sensitivity analysis – lag in benefits by 2 yrs	• Minimum incremental productivity increase of 1.3% per year	• Minimum incremental productivity increase of 2.4% per year
Sensitivity analysis – 20% increase in costs	• Minimum incremental productivity increase of 1.3% per year	• Minimum incremental productivity increase of 2.3% per year
Sensitivity analysis – lag in benefits by 2 yrs 20% increase in costs	• Minimum incremental productivity increase of 1.5% per year	• Minimum incremental productivity increase of 2.6% per year
Assumptions	• Total number of livestock producers in project area at project start: 882,000 • Total number of poultry producers in project area at project start: 1.3 million • Benefits starts in year 2 of project but reaches full coverage only in year 6 • Base run growth scenario for livestock GDP 2009-2015: 3.15% per year • Component 2 investment: US$20 million • Total project investment US$45 million • Annual recurrent expenditures beyond project end equal to 10% of total project costs	

Conclusions

40. This economic and financial analysis used a variety of approaches to assessing overall viability of project investments and indicates project investments would generate positive returns at the farm enterprise level as well as at the aggregate level for all project investments. Analysis, based on assumptions on animal disease prevalence, and Ministry-provided information about livestock densities in project areas, indicate that project activities have the potential to exceed returns of 12 percent.

APPENDICES

Table A6.10: Profitability per year, of a 100 Herd Cattle Operation Linked to Services from a LSC.

Impact of increased productivity/marketing in cattle herd of 100 (in Kwacha)					
		Without LSC	With LSC	Incremental Value (Kwacha)	Incremental Value (US$)
Reduction in mortality (more animals)	Kwacha	0	8,028,000	8,028,000	$ 1,673
Off-take (value of increased animals marketed)	Kwacha	0	29,990,000	29,990,000	$ 6,248
Milk production, increase due to yield gains, # of lactating animals, length of lacation period					
Milk yield (for herd)	Lts/year	2,610	5,583	5,647,750	$ 1,177
TOTAL GAINS				**43,665,750**	**$ 9,097**
Cost of animal health service, maintenance				**23,318,000**	**$ 4,858**
Gross margin				**20,347,750**	**$ 4,239**
Gross margin/animal				**203,478**	**$ 42**
IRR					16%

Table A6.11: Types of Productive Investments

Model	Possible sub-project intervention
Investment in productivity improvements	
Poultry	Broiler or layers for small scale to medium scale producers (500-1000 broilers, 500-1000 layers). Emerging producers will use improved breeds, husbandry practices, demonstrate interest in access to services, linkages to markets
Pig production	Establishment of pig breeding and fattening. Activities will target emerging farmers with better husbandry practices, beginning of specialization (breeders, piglets producers, fatteners…) – 5 to 10 sows – 8 fattened pigs per sow per batch (1.5 batches per year) - access to services and linked to market
Red meat	Small to medium scale goat and beef production with productivity improvements through disease control, fattening, improved genetics
Small scale dairy production	Small scale production with higher productivity from improved feed/disease control and genetic improvement.
Investments in new or expanding livestock enterprise activities	
Milk collection center	Basic cooling equipment with guaranteed market source
Milk processing	Milk products, yogurt production for local market
Meat processing	Small to medium scale meat product processing
Hatcheries	Small to medium scale operations servicing more remote areas
Investments in improved service delivery	
Artificial Insemination services	Expansion of small scale AI providers through training, service contracts linked to producer groups
Private veterinary service	Expansion of private vet services through training, service contracts linked to producer groups
Livestock Service Centers	Investments in integrated production, disease control and marketing services

Table A6.12: Potential Investment Packages Identified by Stakeholders.

Possible Investment Packages under the Competitive Grant (Component 2.1), provided to associations of at least 10 people						
Type of investment, US$	**Grant**	**Matching Contribution**	**# of possible projects**	**Possible envelope for projects**	**Possible # of beneficiaries**	
Broiler operations *	$ 10,705	$ 2,676	200	$ 2,141,031	10,000	
Laying operations	$ 15,802	$ 3,951	150	$ 2,370,313	7,500	
Pig production/fattening	$ 11,585	$ 2,896	100	$ 1,158,542	5,000	
Cattle fattening	$ 23,844	$ 5,961	50	$ 1,192,188	2,500	
2-cow dairy operation	$ 4,011	$ 1,003	150	$ 601,625	11,250	
MCC	$ 58,063	$ 14,516	TBD			
Possible number of productive investment projects		500 - 1000		$ 7,463,698	36,250	
Potential number of beneficiaries	40,000 - 60,000					
Possible matching grant ceiling	US$ 15 million					

* Grant includes operational costs for one year which covers 2.5 broiler cycles and 2.2 liters for pigs. Given variability of forage, one cattle fattening operation will planned/yr.

Annex 7: Governance Management Framework

Overview of the Governance Management Framework (GMF)

1. **Background.** The LDAHP is the first stand-alone livestock project supported by the World Bank in Zambia after a hiatus of over twenty years and is sensitive to the operating environment. This proposed Governance Management Framework (GMF) is intended to provide safeguards for effective delivery of results under a transparent and accountable environment. Other considerations are the importance attached to reducing corruption and maintaining the Bank's reputation as it relates to construction of livestock infrastructure and approval process as well as implementation of sub-projects while recognizing existing political and economic realities in Zambia. The Ministry of Agriculture and Livestock (MoAL) operates under a legal framework which mandates it to be the sole authority in the control of listed notifiable diseases and diseases of significant economic importance. The MoAL has also retained a dominant role in the provision of veterinary and other livestock services. Livestock producers have traditionally enjoyed free or highly subsidized veterinary and livestock services, however, budgetary constraints have made it difficult to sustain these services. Animal disease incidence and low productivity have prevented the sustainable growth of the sub-sector. Project design therefore has taken into account the need to improve the delivery of these essential animal health services (off-farm) and productivity enhancing investments (on-farm). In both cases, some infrastructure development will take place while a matching grant facility will be the main vehicle to deliver productivity enhancing investments. The selection of location for the publically funded livestock services infrastructure will be subjected to a transparent and participatory process. The approval process for sub-grants will ensure that the possibility of elite capture is minimized if not eliminated and this will be locked in the sub-grant approval, implementation and monitoring process. This will be elaborated in the Project Implementation Manual (PIM). Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and updated January 2011 shall apply to the project.

2. Although Zambia has had relatively peaceful presidential and parliamentary elections since 1964 and six of these elections have been held since 1991 when multi-party democracy was re-introduced, the most recent elections have ushered in a new Government which appears resolved on fighting corruption. Power and authority however, remains centralized in the President and the president enjoys substantial discretion. Although continuity in the political governance is expected, sustaining the reform agenda under vast short-term political gains could be challenging. The fertilizer and maize subsidy programs combined account for more that 60 percent of the government agriculture budget and hence leaves inadequate resources for investments in other productivity enhancing activities such as research and extension.

3. **The Project Specific GAC Issues** that are critical in terms of reducing potential GAC risks for satisfactory project implementation include: (i) location and management structure of Livestock Service Center Infrastructure; (ii) eligibility and selection process for demand driven matching grants for livestock; and (iii) implementation of the project activities through the decentralized ministry structures; (iv) well-functioning fiduciary arrangements established within MoAL are essential for effective implementation of agreements; and (v) strong institutional capacity is required.

4. Key risks, ratings and mitigation measures for improving Governance and Accountability of the LDAHP at country level and project level are tabulated in Annex 4 ORAF.

5. Action points to provide adequate implementation support and provisions for a Governance and Accountability Action Plan (GAAP) are given in Table A7.1. GAC issues that are included in the project design are: (i) A transparent and participatory process designed in the project to ensure optimum location of livestock infrastructure; (ii) a tight criteria for eligibility of grants prepared under a stakeholders consultative process; (iii) monitoring and evaluation (M&E) system designed and to be implemented using participatory methods of all beneficiaries and civil society (fully budgeted in M&E budget); and (iv) Steering committee that includes producer organizations and service providers; (v) Matching Grant Committees at provincial level incorporating Civil Society Organizations; and (vi) a pre-screening of project of sub-project proposals at district level to certify that applicants are engaged in agricultural activities.

6. **A Risk Assessment Review** (Country office Risk Assessment Committee) took place prior to the Quality Enhancement Review (QER), to review progress in drafting the project's Operational Risk Assessment Framework (ORAF) on June 10, 2011. The objective of this review was to provide guidance to the project preparation team on the appropriate identification and risk ratings from the country's operating environment including governance issues during project design phase.

7. Based on the **Risk Assessment Review** the following GAC issues were taken into account and are reflected in the GAC Action plan.

a) Reduce the risk associated with elite capture by creating a transparent and all inclusive assessment and approval process and handle any potential collusion among members of grants committees and administrative structures.
b) Ensure livestock infrastructure location, management, operations and maintenance and sustainability of infrastructure to prevent all too familiar white elephants is taken seriously.
c) Recognized that MoAL's current internal capacity is low in a few specialist areas such as matching grant administration, business development, procurement and safeguards and this will require specialized training and addition of staff to the project team who can handle such responsibilities.
d) Weak capacity in financial management issues at the central MoAL level as well as at decentralized levels where subprojects will be implemented are issues relevant to the GAC agenda. An action plan on financial management issues based on the findings of the FM assessment, and monitoring during implementation has been agreed and is under implementation.
e) On GAC related project safeguards issues it was noted that the safeguards assessment has been completed and the Integrated Safeguards Data Sheet (ISDS) identifying required action plan has been disclosed.
f) On disclosure of information on project procurement data, project team would follow the procedures currently used in other agricultural projects in Zambia.

8. **Monitoring Arrangements:** Project GAC action plan implementation will be a key responsibility of the National Project Coordination Office. Individual issues related to safeguards

and fiduciary matters would be monitored by the project subject matter specialists. Overall oversight will be provided by the NPSC. Bank implementation support missions will monitor compliance twice yearly and the team will include the required multi-disciplinary members (see Annex 5 for implementation arrangements and team composition).

Table A7.1: Governance and Accountability Action Plan

Issues Identified for Monitoring	Proposed Mitigation Measures	Specific Milestones	By When
Country-Sector-Project level Reinforcement of GAC issues	Country office GAC Committee (ZGAC) provided input during the risk review meeting (preparation) phase of the project. Continuous dialogue with ZGAC committee to ensure agriculture sector inclusion in country level engagement	Risk Assessment Review based on draft ORAF held on June 10, 2011. Presentation of the Governance Framework on December 5, 2011 to the ZGAC Committee (Country Office Risk Committee)	ZGAC meeting held and review Process completed by mid December 5, 2010 Ag sector monitoring Indicators included for FY12
	Livestock Donor Coordination Sub-group would provide additional linkages and entry points for improved dialogue	Include sector constraints on budget allocation, FM capacity enhancement in the CP agenda and on-going dialogue	Based on actual needs and timing, topics are included as agenda items in the monthly troika meetings
Ineligible expenditures, Financial Management Fraud at the local decentralized level	Tracing and monitoring transactions beyond the traditional audits and withdrawal applications	Quarterly reports submitted during implementation	Random during implementation
Grievance Redress and Complaints handling	Grievance redress and complaints handling mechanisms is addressed in the PIM; facilitation through decentralized offices, the Environmental and Social Management Framework (ESMF) and the Resettlement Policy Framework (RPF).	Preparation of • PIM – to describe the process. ESMF / RPF – proposed Grievances handling methods are to use decentralized offices of public service (to be defined in new MoAL structure) administration method	Grievance and redress mechanisms will be described in the PIM
Monitoring & Evaluation	A comprehensive Management Information System including the LIMS to produce timely and accurate information including financial information to enable management to monitor the Project effectively	Preparation of • PIM • Project's M&E Module	PIM includes the M&E module
	Information sharing and communication strategy to be considered	Preparation of • PIM. • Project's M&E Module	M&E module is ready
Matching Grant Approval Process	Appoint a Matching Grant Manager with track record of experience	Methodology developed by effectiveness and included in the PIM	Six months after Project effectiveness
Capacity of	Training and capacity building	• Specific agreements with	First year of

smallholder livestock farmer organizations	of smallholder organizations is an integral part of project design. Service providers will be eligible for grants to strengthen their linkages with the producers in service provision and grants will cover outreach, information sharing and technology dissemination.	producer organizations reached.	Project Implementation and reviewed every two years.
Livestock Service Center management operation and maintenance	Establishing Partnership with service providers	MoUs or contracts with service providers developed by NPCO to manage, operate and maintain LSC and were applicable collect user fees	Throughout Project implementation.
Livestock Service Center utilization	Assessing LSC utilization and level of satisfaction from using communities	• Study assessing the utilization of LSC and the level of satisfaction of communities • Decision to continue supporting LSC building based on this study results	Before MTR
Environmental, Social and Resettlement issues.	Prepare and execute project level ESMF and RPF framework documents and site specific Environmental Management Plans (EMPs) and Resettlement Action Plans (RAPs) once the sites are determined	• Preparation of ESMF and RPF • Preparation and implementation of sub-project specific EMPs and RAPs	ESMF and RPF ready and disclosed Site specific EMPs and RAPs ready.

9. **Grievance Mechanisms.** The grievance mechanism is detailed in the RPF (see safeguards section of Annex 3), and does utilize the existing systems and structures from the lowest levels through local authorities. The three grievance handling methods proposed under the RPF are: to use decentralized offices of public service (Provincial, Districts) administration method; and Local government organs method. The process at the local level would include the chiefs and complaints committee at ward level with community and project affected peoples' representatives. The PCO will be tasked to include key stakeholders as well as service providers in each area and NGO community watch dogs (where available) selected specifically for this function so that interests of those aggrieved are respected. Site specific details of grievance monitoring mechanisms will be developed under the site specific RAPs. In addition to this grievance mechanism described above, the project will develop a system which will allow complainants to send text messages from their mobile phones to designated numbers at the PCO. Upon receipt of these text messages, the responsible officer within the PCO will call back to follow-up the complaint. All complaints will be documented as well as monitored until conclusion. The complainant will be informed about the progress and status of his/her complaint. Speed, reliability and transparency will be the hallmark of this grievances mechanism. A Grievances Redress Mechanism based on best practices in other projects is detailed in the Project Implementation Manual. In an unlikely situation that these channels of handling grievances are not satisfactory, then, the aggrieved individuals or communities can resort to Zambia Courts of Law starting with the local magistrate's court.

ZAMBIA

LIVESTOCK DEVELOPMENT AND ANIMAL HEALTH PROJECT