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IDA/R2017-0342/1

November 16, 2017

Closing Date: Thursday, December 7, 2017 at 6 p.m.

FROM: Vice President and Corporate Secretary

Nepal - Livestock Sector Innovation Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Nepal for a Livestock Sector Innovation Project (IDA/R2017-0342), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC and MIGA

Document of
The World Bank

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Report No: PAD1605

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 56.7 MILLION
(US$80.0 MILLION EQUIVALENT)

TO NEPAL

FOR A

LIVESTOCK SECTOR INNOVATION PROJECT
NOVEMBER 14, 2017

Agriculture
SOUTH ASIA

CURRENCY EQUIVALENTS

(Exchange Rate Effective: August 31, 2017)

Currency Unit	=	Nepalese Rupee (NPR)
NPR 102.28	=	US$1
US$1.41	=	SDR 1

FISCAL YEAR

July 16 – July 15

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADS	Agriculture Development Strategy
AFSP	Agriculture and Food Security Project
AI	Artificial Insemination
BCR	Benefit-Cost Ratio
BFIs	Banks and Financial Institutions
CCD	Credit to Core Capital Plus Deposit
CENA	Capacity Enhancement Needs Assessment
CfCA	Co-financing and Cooperation Agreement
CIAA	Commission for the Investigation of Abuse of Authority
CPS	Country Partnership Strategy
CQS	Selection Based on Consultants' Qualifications
CSA	Climate-smart Agriculture
CSO	Civil Society Organization
DA	Designated Account
DADO	District Agriculture Development Office
DAH	Directorate of Animal Health
DDC	Dairy Development Corporation
DFIL	Disbursement and Financial Information Letter
DFTQC	Department of Food Technology and Quality Control
DLO	District Livestock Office
DLS	Department of Livestock Services
DLSO	District Livestock Service Office
DLSU	Decentralized-level Support Unit
EID	Emerging and Reemerging Infectious Disease
ESMF	Environmental and Social Management Framework
ESW	Economic and Sector Work
EX-ACT	Ex-Ante Carbon-balance Tool
FAO	Food and Agriculture Organization of the United Nations
FIRR	Financial Internal Rate of Return
FM	Financial Management
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoN	Government of Nepal

GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
ICT	Information and Communication Technology
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
IPM	Integrated Pest Management
IRR	Internal Rate of Return
IT	Information Technology
IUFR	Interim Unaudited Financial Report
KPI	Key Performance Indicator
LMIS	Livestock Management Information System
LMP	Livestock Master Plan
LSC	Livestock Service Centre
M&E	Monitoring and Evaluation
MG	Matching Grant
MIS	Management Information System
MLSC	Municipality-level Service Center
MoAD	Ministry of Agricultural Development
MoLD	Ministry of Livestock Development
MoPE	Ministry of Population and Environment
MTR	Mid Term Review
NARC	Nepal Agricultural Research Council
NLSIP	Nepal Livestock Sector Innovation Project
NPV	Net Present Value
OAG	Office of the Auditor General
PACT	Project for Agriculture Commercialization and Trade
PDO	Project Development Objective
PIM	Project Implementation Manual
PMU	Project Management Unit
PO	Producer Organization
PPA	Project Preparation Advance
PP	Productive Partnership
PPR	*Peste des Petits Ruminants*
PSC	Project Steering Committee
PVS	Performance of Veterinary Services
RAP	Resettlement Action Plan
SoE	Statement of Expenditures
SOP	Standard Operating Procedure
SP	Subproject
TA	Technical Assistance
TTL	Task Team Leader
VCDPF	Vulnerable Community Development Planning Framework
VDC	Village Development Committee
VPH	Veterinary Public Health
VS	Veterinary Services
WOP	Without Project

Regional Vice President:	Annette Dixon
Country Director:	Qimiao Fan
Country Manager	Takuya Kamata
Senior Global Practice Director:	Juergen Voegele
Director:	Martien van Nieuwkoop
Practice Manager	Mary Kathryn Hollifield
Task Team Leaders:	Purna Chhetri, Omar Lyasse

NEPAL
Livestock Sector Innovation Project

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PAD DATA SHEET

NEPAL

Livestock Sector Innovation Project (P156797)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

GFA12

Report No.: PAD1605

Basic Information		
Project ID P156797	EA Category B - Partial Assessment	Team Leader(s) Purna Bahadur Chhetri, Omar Lyasse
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ]	
	Financial Intermediaries [ ]	
	Series of Projects [ ]	
Project Implementation Start Date January 2018	Project Implementation End Date 30-June-2023	
Expected Effectiveness Date April 2018	Expected Closing Date 30-June-2023	
Joint IFC No		

Practice Manager	Senior Global Practice Director	Country Director	Regional Vice President
Mary Kathryn Hollifield	Juergen Voegele	Qimiao Fan	Annette Dixon

Borrower: Nepal					
Responsible Agency: Ministry of Livestock Development					
Contact:			Title:	The Secretary	
Telephone No.: +977 1 4211480			Email:	info@mold.gov.np,	

Project Financing Data (in US$, Millions)					
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[X]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	115.00	Total Bank Financing:	80.00

Financing Gap:	0.00	

Financing Source	Amount
BORROWER/RECIPIENT	10.00
International Development Association (IDA)	80.00
Borrowing Country's Fin. Intermediary/ies	15.00
LOCAL BENEFICIARIES	10.00
Total	115.00

Expected Disbursements (in US$, Millions)

Fiscal Year	2018	2019	2020	2021	2022	2023	0000	0000	0000	0000
Annual	5.00	10.00	20.00	25.00	18.00	2.00	0.00	0.00	0.00	0.00
Cumulative	5.00	15.00	35.00	60.00	78.00	80.00	0.00	0.00	0.00	0.00

Institutional Data

Practice Area (Lead)

Agriculture

Contributing Practice Areas

Finance & Markets, Trade & Competitiveness

Proposed Development Objective(s)

The Project Development Objectives (PDO) are to increase productivity, enhance value addition, and improve climate resilience of smallholder farms and agro-enterprises in selected livestock value-chains in Nepal.

Components

Component Name	Cost (US$, Millions)
Component A: Strengthening Critical Regulatory and Institutional Capacity	5.00
Component B: Promoting Sector Innovation and Modernizing Service Delivery	40.00
Component C: Promoting Inclusive Value Chains for Selected Livestock Commodities	30.00
Component D: Project Management and Knowledge Generation	5.00

Systematic Operations Risk- Rating Tool (SORT)	
Risk Category	**Rating**
1. Political and Governance	High
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
OVERALL	Substantial

Compliance		
Policy		
Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver 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/BP 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 Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants			
Name	**Recurrent**	**Due Date**	**Frequency**
Establishment of the Project Steering Committee		2 months after the Effective Date	
Description of Covenant The Recipient shall establish, within 2 months of the Effective Date, and thereafter maintain, throughout the period of implementation of the Project, the Project Steering Committee with functions, composition, and resources acceptable to the Association, as set forth in the Project Implementation Manual (PIM), to provide policy guidance and support to the Project Management Unit (PMU) and carry out interministerial/interagency coordination to facilitate Project implementation			
Name	**Recurrent**	**Due Date**	**Frequency**
Maintenance of the Project Management Unit		Throughout the period of the project	
Description of Covenant The Recipient shall maintain, throughout the period of implementation of the Project, a PMU, within the Ministry of Livestock Development (MoLD), headed by a Project Director supported with adequate professional and administrative staff in numbers and with qualification and experience and under terms of reference satisfactory to the Association, and provided with resources and powers as shall be required for it.			
Name	**Recurrent**	**Due Date**	**Frequency**
Project Implementation Manual		1 month from the Effectiveness Date	
Description of Covenant The Recipient shall, within 1 month of the Effective Date, prepare and adopt the Project Implementation Manual (PIM) in a manner and substance satisfactory to the Association.			
Name	**Recurrent**	**Due Date**	**Frequency**
Financial Management Specialist		2 months from the Effectiveness Date	
Description of Covenant The Recipient shall, within 2 months after the Effective Date, and thereafter maintain throughout the implementation of the project a financial management specialist with qualifications and experience acceptable to the Association.			
Name	**Recurrent**	**Due Date**	**Frequency**
Procurement Specialist			
Description of Covenant The Recipient shall, within 2 months after the Effective Date, and thereafter maintain throughout the implementation of the project a procurement specialist with qualifications and experience acceptable to the Association.			

Team Composition				
Bank Staff				
Name	**Role**	**Title**	**Specialization**	**Unit**
Purna Bahadur Chhetri	Team Leader (ADM Responsible)	Senior Agricultural Specialist.	Agriculture and Rural Development	GFA12
Omar Lyasse	Team Leader	Senior Agriculture Economist	Economics	GFA12
Shambhu Prasad Uprety	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement and fiduciary	GGO06
Timila Shrestha	Financial Management Specialist	Financial Management Specialist	Financial Management	GGO24
Annu Rajbhandari	Safeguards Specialist	Environmental Specialist	Environmental Specialist	GEN06
Deep Nar Singh Karki	Team Member	Operations Officer	Operations	CTTPE
Drona Raj Ghimire	Team Member	Senior Environmental Specialist	Safeguards	GEN06
Ishwar Neupane	Safeguards Specialist	Consultant	Social Development and safeguards	GSURR
Junko Funahashi	Counsel	Lead Counsel	Legal	LEGES
Martin Serrano	Counsel	Senior Counsel	Legal	LEGES
Karishma Wasti	Team Member	Agricultural Specialist	Agriculture and livelihood	GFA12
Manav Bhattarai	Team Member	Senior Health Specialist	Health Management	GHN19
Nagendra Nakarmi	Team Member	Senior Program Assistant	Resource Management	SACNP
Neena Shrestha	Team Member	Procurement Assistant	Procurement	GGO06
Pierre Jean Gerber	Team Member	Senior Livestock Specialist	Livestock development	GFA12
Ramesh Raj Bista	Team Member	Consultant	Procurement	GGO06
Rohan Selvaratnam	Team Member	Operations Analyst	Operations	GFA12

Rupa Shrestha	Team Member	Temporary	Procurement	GGO06
Sabin Raj Shrestha	Team Member	Senior Financial Sector Specialist	Financial Management	GFM06
Satish Kumar Shivakumar	Team Member	Finance Officer	Finance	WFALA
Srivathsan Sridharan	Team Member	Finance Analyst	Finance	WFALA
Kiran Gautam	Team Member	Senior Program Assistant	Operations	SACNP

Extended Team

Name	**Title**	**Office Phone**	**Location**
Helen Winifred Leitch	Senior Livestock Specialist		FAO, Rome

Locations

Country

	First Administrative Division	**Location**	**Planned**	**Actual**	**Comments**

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required?

I. STRATEGIC CONTEXT

A. Country Context

1. **Over the past decade, Nepal's economy has performed reasonably well.** Growth averaged 4.3 percent (at market prices) over 2005–15. Although declining as a share in the economy, agriculture continues to play a large role, contributing one-third of the value-added. The service sector has grown in importance, accounting for more than half of the value-added in recent years. Industry in general, and manufacturing in particular, has grown more slowly and their relative share in the economy is falling. Similarly, exports continue to struggle, while imports are fueled by remittances that exceed 30 percent of the gross domestic product (GDP). Inflation was in single digits for most of the past decade, with the peg of the Nepali rupee to the Indian rupee providing a nominal anchor. Fiscal balances remained sustainable owing to strong revenue growth and modest spending. The incidence of poverty measured against the national poverty line fell by 19 percentage points from 2003/04 to 2010/11, and in 2010/11,[1] 25 percent of the population was counted as poor. Most multidimensional indicators of poverty also showed improvements across regions in Nepal. However, these gains remain vulnerable to shocks and setbacks, like the 2015 earthquakes that were followed by trade disruptions resulting in the lowest economic growth in 14 years in 2016.

2. **Economic activity, which rebounded strongly in FY2017, following two challenging years, has once again been disrupted by floods affecting more than one-third of the country.** The rebound in FY2017 stemmed partly from a base effect, as well as a favorable monsoon boosting agricultural output and earthquake reconstruction gathering speed to raise investment. High inflation in the past two years has moderated sharply and has decelerated to 2.7 percent (year on year) in July 2017. Government revenue continued to perform well, and spending has also picked up significantly in FY2017 compared to previous years. Nevertheless, ambitious expenditure targets envisioned in the budget have not been met and the quality of spending has not improved with 60 percent of capital spending occurring in the last quarter. Meanwhile, the rapid credit growth in early 2017 has slowed but deposits growth has continued to decline, pushing up the interest rates. On the external side, the cumulative effect of a sharp trade balance deterioration and a slow growth of remittances has put some pressure on the current account. Economic activity, which was expected to progress well in FY2018, has been affected by the worst floods in decades, particularly affecting the agriculture output.

3. **A new constitution that defined Nepal as a federal democratic republic was promulgated in September 2015.** With the formulation of the new constitution, Nepal is now migrating to a federal state structure with autonomous subnational governments. One major impact of the transition is the redundancy of the district offices and their suboffices to be replaced by the newly elected local governments. The country will now have 7 States and 753 Municipalities. Funds, functions, and functionaries hitherto managed through the 75 District Development Committees will move to new local governments. While the proposed 753 Municipalities are expected to provide better outreach and services, they will likely take significant time to become fully operational. In addition to fresh general elections, Nepal will also elect a new provincial tier of Government by December 2017.

[1] Recent data not available.

B. Sectoral and Institutional Context

4. **Agriculture makes up 34.3 percent of the GDP with livestock accounting for 26.9 percent of agricultural GDP (Department of Livestock Services [DLS] 2011)**. Agriculture in Nepal is largely subsistence with an average landholding of 0.96 ha. Of Nepal's population, 80 percent resides in rural areas, and 66 percent is engaged in agriculture. Of the population engaged in agriculture, 70 percent keeps livestock[2], and a large proportion of the labor is provided by women. Agricultural productivity remains low. Recent gains in agricultural growth have been driven by increased prices of agricultural products (78 percent) rather than productivity (28 percent).[3]

5. **Recognizing the role of agriculture in the Nepali economy, the Government of Nepal (GoN) has promulgated the Agriculture Development Strategy (ADS) in 2015, which will guide agriculture development in Nepal for the next 20 years**. The ADS underpins the role of livestock for sustained agricultural and economic growth, poverty reduction, and improving food and nutrition security. Key elements envisaged as livestock development strategies comprise productivity enhancement, strengthening extension and outreach services to graduate farmers from subsistence farming systems, institutional capacity development, and following a value chain approach with space for private sector engagement.

6. **Productivity levels are low, and demand for livestock and livestock products, particularly milk and meat, has outstripped supply in Nepal**, causing increasing reliance on imports, mainly from India. At the national level, demand for milk and meat is met by average annual imports of nearly 14,400 metric tons of dairy products, 430,000 live animals (90 percent goats), and 600 metric tons of meat annually, corresponding to an import bill of about US$40 million.

7. **Low productivity in livestock production also contributes to high greenhouse gas (GHG) emissions.** Unproductive animals, high mortality rates, and poor feeding and manure management practices translate into relatively high levels of GHG emissions per unit of product, as well as other environmental impacts such as inefficient use of water and nutrient loading. Livestock is estimated to contribute 76 percent of GHG emissions from agriculture, or about 40 percent of total anthropic emissions in the country. Recognizing this issue, the GoN included the agriculture and livestock sectors in its Intended Nationally Determined Contribution (INDC) plan for a Low Carbon Economic Development Strategy.

8. **Institutional capacity is inadequate and extension and outreach services are weak.** Due to the shortage of ground staff, there is a gap between farmers and extension centers. The Livestock Service Centers (LSCs) have been facing difficulty in meeting the demand for technical services due to inadequate basic diagnostic facilities, budget, and trained human resources. However, with the creation of 753 Municipalities, the new arrangement is expected to improve service delivery significantly especially at the grassroots level. In parallel, the opportunities provided by cooperatives, producer groups, and private businesses in providing extension services remain largely unexploited.

[2] FAO (Food and Agriculture Organization of the United Nations). 2006. *Livestock Sector Brief, Nepal*. Food and Agriculture Organization of the United Nations, Livestock Information, Sector Analysis and Policy Branch (AGAL).
[3] World Bank. 2016. *Sources of Growth in Agriculture for Poverty Reduction and Shared Prosperity*. Economic and Sector Work, World Bank.

9. **Nepal is vulnerable to climate-related risks.** Nepal is one of the top five countries that are subject to the impacts of climate change. The Global Climate Model projections show a multi-model mean of 1.4°C increase in temperature in Nepal by 2030, within a range of 0.5–2.0°C. The models also predict a −14 percent to +40 percent change in precipitation during the monsoon season and an increased frequency of heavy precipitation events. Already, the impact of climate change is seen through increased rainfall variability, increased winter drought, and an increased number of dry spells, which has negatively affected agricultural productivity and production, leading to large annual variations in crop and pasture production with an important impact on feed availability. In addition, climate change is likely to increase the frequency of the weather-related hazards (for example, extreme events and emerging diseases), which will also have their toll on agriculture and livestock production. With the livelihood of more than 80 percent of the population relying on agriculture, building the resilience of agriculture production systems and mitigating the impact of climate change in agriculture cannot be overemphasized. The Government's ADS (2015) highlights increased resilience to climate change as one of the corner stones for improved productivity of land and labor.

10. **To tackle the multidimensional nature of the issues constraining the development of the livestock sector in Nepal, the project proposes a holistic and integrated approach** to spur increased productivity and commercialization with the active involvement of the private sector. The project will channel its support through three main channels: (i) creating an enabling regulatory and institutional environment; (ii) enhancing livestock productivity through improving livestock services delivery in terms of quality and quantity; and (iii) strengthening key strategic livestock value chains and improving access to business development services. Further, Nepal has taken several initiatives to reduce climate hazards and build resilience in the agriculture and livestock sector by including adaptation and mitigation action, through knowledge management and institutional strengthening. Nepal is promoting climate-smart agriculture (CSA) by establishing farmer field schools for promoting innovation and adoption of climate-friendly practices and technologies. Agriculture, livestock in particular, is also one of the main commodities through which the country plans to promote low-emission economic development. Nepal's ADS lays out the Government's plan to gradually move toward commercial agriculture, while addressing climate change vulnerability (Ministry of Population and Environment [MoPE], 2016).[4]

11. **Developing the livestock sector offers opportunities to address gender disparities.** Nepal has been moving toward feminization of agriculture with men migrating to urban areas and abroad in search of more remunerative employment opportunities. The proportion of labor force in the agriculture sector fell from 76 percent in 1998/99 to 74 percent in 2008, and women workers occupied a majority (84 percent) of that share (Central Bureau of Statistics 2011). However, women continue to face extremely low gains when it comes to ownership over assets, access to resources, ability to take part in decision-making processes in development initiatives, benefit from capacity building, and economic gains. To ensure gender equity and citizen engagement, the project will make a conscious effort to allow women and beneficiaries to participate in all aspects of the project cycle, from planning and implementation to monitoring the results.

[4] INDC. MOPE, GoN 2016.

C. Higher Level Objectives to which the Project Contributes

12. **The project is fully aligned with the objective of the 2014–2018 Nepal Country Partnership Strategy (CPS) (83148-NP[5]), to help reduce extreme poverty and promote shared prosperity by** (i) increasing economic growth and competitiveness (pillar 1) and (ii) increasing inclusive growth and opportunities for shared prosperity (pillar 2). The strategy identifies the need to shift from low-value food crops toward higher-value agricultural innovations that have higher potential to raise farmer incomes with a particular focus on integrating smallholders in value chain for nontraditional higher-value commodities (outcome 2.1, paragraph 56). The proposed project, therefore, directly contributes to achieving the overall objective of the CPS. The project is also consistent with the World Bank's twin goals of ending extreme poverty and promoting shared prosperity.

13. **Further, the project contributes to the objectives of the GoN's ADS (2015).** Over the course of this period, the structure of the sector in Nepal is expected to change considerably and agribusiness and nonfarm rural activities will gain in relative importance in relation to primary production. The development of nonfarm activities based on agriculture will be fundamental for the growth of an overall robust economy, a more balanced rural economy, and employment generation. The project is well aligned with the four strategic pillars (governance, productivity, commercialization, and competitiveness) of the ADS, thus supporting the country's priorities. The project will also contribute to achieving Nepal's commitment toward the INDC.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

14. **The Project Development Objectives (PDO) are to increase productivity, enhance value addition, and improve climate resilience of smallholder farms and agro-enterprises in selected livestock value-chains in Nepal.**

Project Area

15. **The project will be implemented across the mountains, hills, and the Tarai plains in four clusters along the road corridor encompassing five newly established States.** These clusters have a population of 12.4 million (6.4 million female) belonging to 25 districts, which correspond to 271 Municipalities under the new structure.[6] A cluster approach has been taken to maximize the efficiency of service delivery, produce impact at scale, and maximize synergies.

Project Beneficiaries

16. **The primary beneficiaries will be 200,000 livestock producers (at least 45 percent female) from 271 Municipalities.** In addition, about 500 small and medium-size agro-enterprises will benefit from production and postproduction value chain support. This target has been derived after extensive consultations with various stakeholders including the Nepal Dairy Development Board, the Dairy

[5] Discussed by the Board on May 29, 2014

[6] The 75 districts are now being replaced by 753 Municipalities. The proposed project districts are Panchthar, Ilam, Jhapa, Dhankuta, Morang, Sunsari, Udaypur, Saptari, Dhanusha, Siraha, Kathmandu, Kabhre, Makwanpur, Chitwan, Shyangja, Kaski, Mustang, Manang, Tanahun, Myagdi, Rupendehi, Nawalparasi, Gulmi, Palpa, and Bardia.

Development Corporation (DDC), DLS and its decentralized offices, the private sector in dairy and goat value chains, Nepal Goat Farmers Association, Central Dairy Cooperative Association, Nepal Pashmina Industries Association, and key development partners (DPs).

PDO Level Results Indicators

17. **The key performance indicators (KPIs) are as follows:**

18. **KPI #1 -** Productivity of targeted livestock commodities (milkand milk products), goat meat, *Chyangra* wool) among beneficiaries measured through percentage increase (i) of average milk production per cow/buffalo; (ii) in offtake rate expressed as carcass weight for goats, and (iii) increase in *Chyangra* wool cashmereproduction.

19. **KPI #2 -** Increased sales of value-added products in targeted value chains measured through increase in production output processed and marketed in the dairy, goat meat, and *Chyangra* cashmere value chains.

20. **KPI #3 -** Farmers adopting improved climate-smart agricultural technology[7] (of which female) measured by the number of target farmers, including female farmers, adopting the practices and technologies promoted by the project. (*Corporate Results Indicator: "Farmers[8] adopting improved agricultural technology"*)

21. **KPI #4 -** Farmers reached with agricultural assets or services (of which female) measured through the cumulative number of farmers, including the share of women, and small and medium entrepreneurs, who benefit from one or more project activities. (*Corporate Results Indicator: "Farmers reached with agriculture assets or services"*)

III. PROJECT DESCRIPTION

A. Project Components

22. **The project design entails partnerships with institutions at both local and central levels of Government, farmer groups and cooperatives, and private sector counterparts.** The project components are designed to work as mutually reinforcing parts that combine hard investments (productive assets, livestock service, market infrastructure, and so on), as well as soft investments (capacity building, institutional and regulatory strengthening, and so on). A schematic depiction of the project's results chain is provided in annex 1, and a detailed component description is provided in annex 2.

Component A: Strengthening Critical Regulatory and Institutional Capacity (US$5 million, IDA)

23. **This component will be organized around three subcomponents:** (i) policies and regulatory framework, (ii) institutional capacity strengthening, and (iii) establishment of a livestock management

[7] As deemed appropriate by the Ministry of Livestock Development (MoLD) and research institutions under the GoN and accredited universities.

[8] 'Farmers' refers to people engaged in farming activities or members of a farming business (disaggregated by men and women) targeted by the project.

information system. These interventions will also contribute to addressing climate change resilience and mitigation objectives, by strengthening the institutional capacity of government agencies to (i) include climate-smart considerations in key policies and regulations to support the development of the sector and (ii) promote climate-smart livestock practices.

24. **The interventions under this component will contribute to the PDO by helping to establish an enabling policy and regulatory environment that improves the delivery of demand-driven services to livestock producers, provides adequate incentives for private sector investments in the livestock sector, and enables climate resilience and food safety to be improved.** Some of the key activities planned under this component include the formulation and/or updating of the Animal Welfare Act, Animal Health Policy, Livestock Master Plan (LMP), Strategy for One Health Approach,[9] and installation of a central-level management information system (MIS). The project will strengthen citizen engagement in the formulation of the policies, acts, and strategies through participatory approaches to include their concerns.

Component B: Promoting Sector Innovation and Modernizing Service Delivery (US$40 million, IDA)

25. **This component will directly contribute to the PDO by enhancing livestock productivity and climate resilience.** The component will aim at developing the capacity of key stakeholders along the selected livestock supply chains to develop, disseminate, and adopt best practices. This component will also promote citizen engagement to ensure a demand-driven approach to livestock services. It will also contribute to environmental sustainability and particularly GHG emission reduction through promoting climate-smart practices and technologies geared toward improved efficiency in animal production, for example, through balanced animal nutrition, reduction of disease incidence, and genetic improvement.

26. **Component B will include the following three sub components:** (i) support to producer's organizations including farmers' groups and cooperatives (ii) modernizing animal health and breeding services, and (iii) strengthening farmers' training and extension services.

27. **Key activities planned under this component include** (i) support to producer organizations (POs) establishing and expanding cooperatives, supporting vaccination campaigns on *Peste des Petits Ruminants* (PPR) and Foot and Mouth Disease (FMD), developing forage production and management, and promoting animal health and hygiene; (ii) modernizing animal health and breeding services, upgrading livestock breeding centers in Pokhara, Lahan, Nepalgunj, Chitlang, and Buditola with the required facilities and infrastructure support, and establishing cold chains for vaccination programs; (iii) strengthening farmers' training and extension services, upgrading training and extension curriculum, and training and engaging village-based private service providers such as community health workers, agro-vets, and social mobilizers; and (iv) upgrading the facilities at the vaccine production facilities in Kathmandu, 8 quarantine offices, and 24 quarantine check posts and 2 training centers in States 3 and 6. All these activities will directly contribute to the ability of the livestock institution as well as livestock farmers to adapt to negative impacts of climate change by making available breeds that can tolerate climatic extremes, improving animal health from reduction and control of animal diseases, making available customized extension and outreach services, and improving feed management practices.

[9] 'One Health' represents a call for health researchers and practitioners at the human, animal, and environmental interfaces to work together to mitigate the risks of emerging and reemerging infectious diseases (EIDs). A One Health approach emphasizing inter-disciplinary cooperation is increasingly seen as necessary for effective EID control and prevention.

Component C: Promoting Inclusive Value Chains for Selected Livestock Commodities (US$30 million, IDA)

28. **This component seeks to develop a more commercial-oriented approach for selected livestock sub-sectors and to contribute to import substitution (for dairy products and goat meat) and export promotion (for *Chyangra* cashmere) by improving the productivity and value addition within the targeted value chains.** The component will directly contribute to the PDO by supporting the integration of smallholder livestock farmers in those value chains. The component will focus on improving smallholders' access to markets and on strengthening the backward and forward links among value chain actors. Activities will target direct and indirect support to the actors involved in production, logistics (including quality assurance and food safety), processing, or marketing in the selected value chains (that is, farmer groups, cooperatives, local service providers, traders, processors, and other private sector actors). These activities will directly help farmers to secure their incomes and manage the production risks from climate change and climate variability. Better organized value chains and access to new markets are beneficial to climate change adaptation through all stages of the value chain, because they build farmers' assets and institutional links, increase the volume and reliability of fodder and fodder crop production, and deliver higher profitability to farmers and small businesses in the value chain. These efficiency gains also generate mitigation co-benefits, through the reduction of enteric methane.

29. **The component will include two subcomponents:** (i) development of productive partnerships (dialogue platform, entrepreneurial skills development, and bankable business plans), and (ii) financing livestock value chains through a matching grant (MG) scheme, linking the POs/entrepreneurs with financing institutions and investments in market infrastructure and benefiting from accredited training partners in Nepal to customize and deliver relevant business advisory services (see paragraph 30, subsection III, page 35 under annex 2).

Component D: Project Management and Knowledge Generation (US$5 million, IDA)

30. **This component will support all aspects of project management and implementation, including** (i) strategic and operational planning, execution, and monitoring and evaluation (M&E) of project activities and the appropriate use of project resources; (ii) compliance with Safeguard Documents; (iii) implementation of public awareness and outreach campaigns; (iv) verification and reporting on project execution and impacts thereof; (v) establishment, operationalization, and maintenance of the project management unit (PMU) and decentralized-level support units (DLSUs); and (vi) the preparation/attendance of project-related studies, workshops, and seminars, generating knowledge derived from the project implementation experiences, including but not limited to mainstreaming climate-smart livestock practices, to be communicated to various public and private entities on time and effectively.

B. Project Cost and Financing

31. **Total estimated project costs are US$115 million.** The project costs consist of (i) US$80 million of IDA credit; (ii) US$10 million of beneficiary contributions (farmers, POs, and other value chain actors); (iii) US$15 million of financing from participating financial institutions (co-financing of subprojects [SPs]/ business plans); and (iv) US$10 million equivalent of government contribution.

32. **The IDA project will be structured as an Investment Project Financing in the amount of US$80 million over six years.**[10] The GoN will be seeking retroactive financing, not exceeding US$0.5 million, for planned project activities whose expenditures have been incurred by the borrower in advance of effectiveness but after July 16, 2017, to finance activities such as operational expenses (office rent and utilities) and procurement of vehicles. The Project Preparation Advance (PPA) has been used to carry out baseline studies; preparation of the Project Implementation Manual (PIM); studies related to the dairy value chain, livestock insurance, and *Chyangra* wool production; preparation of the Environmental and Social Management Framework (ESMF); and purchase of office equipment.

33. **The table below details the project financing by project component (in US$, millions):**

Project Components	Project Cost	IDA Financing	% IDA Financing
A. Strengthening Critical Regulatory and Institutional Capacity	7.00	5.00	71
B. Promoting Sector Innovation and Modernizing Service Delivery	45.00	40.00	89
C. Promoting Inclusive Value Chains for Selected Livestock Commodities	54.51	30.00	55
D. Project Management and Knowledge Generation	8.00	4.50	56
PPA	0.50	0.50	100
Total project cost	115.00	80.00	70

34. **With the exception of the MGs (total US$25 million) under Component C, counterpart funding from the Government along with IDA financing will jointly finance the project.** The project will provide MGs under Component C to eligible and viable business proposals. The eligible beneficiary would be required to contribute 50 percent of the required funding from their side in the form of equity equivalent to US$10 million (20 percent) and loan equivalent to US$15 million (30 percent or more) from the registered banks and financial institutions (BFIs). The remaining 50 percent will be provided as MG from IDA financing under the project. The proposals will be submitted to the respective BFIs that will review and recommend the eligible proposals to the PMU. The PMU will, in turn, make the final decision from among the list of potential proposals submitted by the various BFIs. The total amount of grant support will not exceed US$100,000 per proposal.

C. Lessons Learned and Reflected in the Project Design

35. **Lessons from ongoing World Bank financed agriculture projects in Nepal, particularly the Project for Agriculture Commercialization and Trade (PACT), Agriculture and Food Security Project (AFSP), Poverty Alleviation Fund, and Irrigation and Water Resources Management Project, have informed the design of the proposed project reflected by** (i) including effective sustained support to grassroots farmer groups by service providers to improve their performance, (ii) involving non-state

[10] The six-year implementation period allows for a realistic time frame for implementation, because the development of successful productive partnerships (PPs), improving service delivery, capacity building, inherent characteristics of the targeted livestock species, and so on, all take time to achieve the envisaged outcomes. The six-year implementation period was also confirmed by using the World Bank's Project Disbursement Projection Tool, which provides an estimate for disbursements based on historical data of similar projects by sector and by country.

actors for service provision because this would enhance efficiency of service delivery, (iii) including a well-targeted and strategic MG scheme that can effectively assist small-scale producers who do not have access to credit to build their assets and increase their productivity, thus assisting producers and producer groups to develop the requisite asset base to elicit more interest from credit providers, and (iv) including essential measures to strengthen the capacity of the client early on to address social and environmental safeguards considerations.

36. **Other lessons come from the World Bank's experience in financing PPs elsewhere.** A review of those projects identified (i) the importance of supporting initiatives to enhance production and productivity; (ii) the need for strong marketing and market infrastructure (such as livestock market, slaughter house, chilling centers); (iii) the importance of well-targeted, sustained technical assistance (TA); and (iv) the need to support both the quantity and quality of production while improving access to markets and to credit to consolidate the investments in value chains.

37. **Furthermore, this project's design is well aligned to** (i) the mitigation of potential adverse effects through improved livestock supply chain management and (ii) better targeting of policy and investment approaches in the function of the specific value chain needs. Lastly, the project design draws upon findings and recommendations of Nepal's Performance of Veterinary Services (PVS) pathway reports, which provide guidance for the sustainable improvement of National Veterinary Services and compliance with international quality standards of veterinary services (VS).

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

38. **The proposed executing agency is the MoLD. Implementation will take place in four clusters covering five States.** The project duration will be six years[11] to allow for a realistic time frame for implementation.

39. **The project implementation mechanism will comprise a Project Steering Committee (PSC) to provide overall strategic direction and guidance.** A PMU will be established in Kathmandu supported by four DLSUs, covering 271 Municipalities. Each cluster will support an average of 80 Municipalities and each cluster office will be supported with required human resources. In addition to the government-seconded staff, the project will also finance a team of experts drawn from various disciplines to provide technical, managerial, and administrative support to both the PMU and the four cluster offices.

40. **To support the country's transition to a federal structure, the project will adopt the following strategy.** The project will (i) maintain five cost centers, one at the PMU level and four centers at the decentralized level;[12] (ii) build the capacity of the civil servants in planning, management, and fiduciary/governance aspects; (iii) build the capacity of the newly elected local leaders; (iv) promote inter-sectoral coordination; and (v) promote citizen engagement in planning and monitoring of project activities. Annex 3 provides further details on the implementation arrangements, and the implementation support plan is in annex 4.

[11] As projected by the World Bank's Disbursement Projection Tool.

[12] Expenses and procurement of goods and services for the activities that are outside of the project target districts such as the livestock breeding centers and procurement of vaccines will be done from the PMU.

B. Results Monitoring and Evaluation

41. **A robust M&E system will be implemented to track progress on a continuous basis.** A project MIS will be put in place at the PMU level. Progress toward achieving the specific milestones will be tracked as stipulated in the Results Framework. The PMU will produce Implementation Progress Reports on a quadrimester basis (hereafter referred to as four-monthly basis). Data needed for impact evaluation purposes will be collected in project and non-project areas by a third party. A midterm evaluation will be conducted halfway through the project life cycle and an Implementation Completion and Results Report no later than six months after project completion. The project will ensure that gender considerations and citizen engagement are fully integrated in impact evaluation studies and involve beneficiaries to take part in the midterm and final evaluations.

C. Sustainability

42. **The project has identified and included the key players involved in the targeted livestock value chains.** The client ownership of this project is strong because the interventions proposed were identified by the clients themselves. To ensure internalization of project interventions, exit strategies have been integrated into all components of the proposed project. Furthermore, the project will enhance the capacity of the MoLD to provide guidance and strategic direction to support the sector and strengthen the capacity of respective Municipalities for efficient and demand-based extension services. Staff capacity will be built at all levels to promote effective and efficient service delivery. The project will also develop local resources by identifying and training para-veterinarians and community service providers who will continue to provide services at the local level even after the project's lifespan. In addition, the project's value chain investments will be put on a more sustainable footing by promoting: (i) climate-smart technologies and practices including sustainable land/landscape management and waste management systems to minimize greenhouse gas emissions and pollution and (ii) renewable energy supply (bio and solar energy) systems.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

43. **The overall risk rating of the project is Substantial.**

44. **The most critical risks and proposed mitigating measures associated with the project are summarized as follows:**

i. **Political and Governance risks are rated High.** Nepal's transition has been characterized by frequent Government changes. The country has constitutionally adopted a federal Government system; however, it is currently facing the daunting task of smoothening the transition from the old unitary system to the new federal one. The new system takes effect in January 2018 and, in principle, provides opportunities to decentralize development benefits and make service delivery more effective and accountable. However, the risks of jurisdictional overlap between the three tiers of Government, lack of clarity and coherence between policies and devolved powers, and duplication of efforts will remain high during the coming few years. Key aspects of the new system require further definition and may continue to be contested by different population groups. Flexibility in project design and consistent engagement with key stakeholders will help mitigate this risk.

ii. **Macroeconomic risk continues to be Moderate.** Economic growth is expected to moderate on account of the heaviest floods in decades. Inflation is likely to pick up, but is expected to remain relatively low compared to the rates seen in previous years. The fiscal deficit is likely to widen, but given the large cash balances on hand and low debt to GDP ratio, financing will be adequate. The debt sustainability analysis conducted by the World Bank and International Monetary Fund in 2016 maintains a 'low' risk of debt distress. The current account deficit is expected to further widen as imports continue to grow, while remittances remain sluggish.

iii. **Sector Strategies and Policies risks are rated Substantial.** This is mainly due to the inherent risks involved in introducing new ways of doing business and the necessary policy and regulatory reforms needed to ensure the achievement of the project objectives. To help mitigate this, the GoN has expressed a strong commitment to agriculture and livestock sectors development by adopting the ADS, which will help create a conducive environment for private sector involvement and transformational change in Nepal's agriculture and livestock sectors, which will intervene across four strategic pillars: (i) improving governance, (ii) increasing productivity, (iii) profitable commercialization, and (iv) enhancing competitiveness. Furthermore, the project is designed to strengthen the ability of the new sector ministry (MoLD) and its agencies at the lower levels to develop/modify and enforce a policy and regulatory framework that strengthens the livestock sector, particularly through Component A.

iv. **Technical Design of the Project is rated Substantial.** Project activities include the support to testing new innovations in the country such as the establishment of PPs, the use of information and communication technology (ICT) in extension services, promotion of CSA practices, and engagement of the private sector, including BFIs. To mitigate against these risks, the project will provide strong and tailored (adapted to each value chain needs) technical support to the targeted beneficiaries and actors within the value chains.

v. **Institutional Capacity for Implementation and Sustainability risks are High.** This is mainly because the lead agency (MoLD) has only recently been established and faces significant capacity constraints. To mitigate these risks, the project will strengthen institutional capacity through targeted training to carry out its core responsibilities and improve coordination among multiple departments. The World Bank, by virtue of its strong presence and engagement in Nepal, along with relevant experience from elsewhere, has the convening power to aggregate the knowledge and efforts to strengthen the institutions involved in the livestock sector.

vi. **Fiduciary Risk is Substantial**. The fiduciary residual risk for the project is deemed Substantial, particularly with regard to the complexity of the project that will include a decentralized level of implementation and SP management at decentralized levels (risks associated with financial management [FM] and procurement). To mitigate these risks, many stakeholders will be involved in vetting the SPs through transparent and highly participatory mechanisms, in addition to coordination units at the national and decentralized levels (DLSUs/cluster units), capacitated by associated fiduciary teams. The proposed fiduciary arrangements of the project are considered satisfactory to mitigate the associated risks and are able to provide, with reasonable assurance, accurate and timely information on the status of the project as required by IDA. The implementing entity will

ensure that all the applicable World Bank's fiduciary guidelines are followed under the project, backstopped by regular implementation support missions fielded by the World Bank.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

45. **The findings of the economic and financial analysis revealed that the project is technically sound; financially viable; and economically, environmentally, and socially attractive.** The analysis has been undertaken by estimating the net present value (NPV) and benefit-cost ratio (BCR) at a 10 percent discount rate and computing the internal rate of return (IRR) for entire value chains, and the income generated within a reasonable time frame versus the total costs of the project. The positive externalities resulting from improved practices were also included in the economic analysis. GHG emission reduction achieved by the project is estimated to be 5.6 million tons CO_2 equivalent over the 20-year analysis period. At US$30 per ton, this represents a benefit of about US$160 million.

46. **Financial and economic analysis shows that the IRR of the estimated investment of US$115 million will be 24.8 percent.** The economic NPV is positive and amounts to US$141 million. The planning horizon of 20 years was selected to allow for the long-term benefits of the project. A discount rate of 10 percent was used for this analysis.

47. **Sensitivity analysis.** The project is moderately sensitive to a reduction in expected project benefits in milk yield, heifer production, goat meat, pashmina wool production, and selected value chain activities. The project is not very sensitive to a reduction in gross revenue of the selected value chain enterprises. Annex 6 provides the details of the analysis.

Greenhouse Gas Accounting

48. **The World Bank has a corporate mandate to conduct GHG emissions accounting for investment lending.** To estimate the impact of agricultural investment lending on GHG emission and carbon sequestration, the World Bank has adopted the Ex-Ante Carbon-balance Tool (EX-ACT), developed by the Food and Agriculture Organization of the United Nations (FAO) in 2010. EX-ACT allows the basic assessment of a project's net carbon balance, defined as the net balance of CO_2 equivalent GHG that were emitted or sequestered as a result of project implementation compared to a without project (WOP) scenario. EX-ACT estimates the net changes in GHG emissions (emissions and sinks), expressed in equivalent tons of CO_2 per hectare and year. For the proposed project, the GHG analysis considered activities along the various livestock value chains targeted, as well as the proposed feed production and improved pasture management activities. Compared to baseline trends (WOP scenario), the planned project intervention is estimated to result in a net GHG emission reduction of 5.6 million tons of CO_2 equivalent (representing a benefit of about US$160 million) while at the same time increasing production levels by 10–60 percent, depending on commodities.

B. Technical

49. **The project is considered technically feasible because it has identified and addressed critical constraints to small livestock farmers' productivity and livelihoods, with Component A supporting the development of a conducive policy, regulatory, and institutional environment to spur the development of the livestock sector, and Component B focusing on increasing the quality and quantity**

of service provision engaging both public and private service provision to improve the support services framework. Under Component C, the project will provide technical and financial support to demand-driven business plans/SPs. Direct beneficiaries will be formally established livestock farmers' organizations, consistent with the fact that aggregation of production and production costs is essential to improve small-scale producers' access to more profitable markets, while improving their negotiations position. The project also adopts a deliberate approach to promote citizen engagement and gender mainstreaming across all components. Lastly, the project emphasizes sustainability through the mainstreaming of CSA practices.

C. Financial Management

50. **With the splitting of the MoLD from the Ministry of Agricultural Development (MoAD) in December 2015, the MoLD has been gradually building its fiduciary capacity.** The accounts/finance unit currently comprises the Finance Chief and two Finance Officers while an Accountant has already been assigned dedicated for the project. However, considering the scope of the project with 271 Municipalities belonging to five States, an FM consultant will be needed within 2 months of effectiveness of the project, to support PMU for coordination, oversight, and overall effective FM. Also, for each cluster office, an Accounts Assistant has been agreed to be deployed to manage FM who would be supported by an FM consultant at respective cluster offices, as required based on the transaction volume because most of the transactions, to the extent possible, are expected to incur at the PMU.

51. **For the MGs under Subcomponent C.2, the fund flow will be limited to the PMU.** Such financial support will comprise provision of 50 percent grant upon assurance of 20 percent equity and at least 30 percent loan by BFIs. The involvement of the financial institution will also ensure adequate assessment of financial viability in monitoring of SPs progress. The required arrangements between the MoLD and the financing institutions will be included in the Co-financing and Cooperation Agreement (CfCA) to formalize the partnership of the participating BFIs. The details on project operations will be included in the PIM. The PIM will also include other required measures for system strengthening with the involvement of local bodies and citizen engagement in the federal context.

52. **An assessment of financing institutions has identified the potential institutions that could partner with the project to provide the required financing to eligible business proposals.** The project has already assessed at least six micro-finance institutions and three commercial banks that hold the best prospects for supporting the project. These financing institutions[13] have expressed their interest to be involved in the MG scheme envisaged under Component C.

53. **The financial progress of the project will be reported on a four-monthly basis through the Interim Unaudited Financial Reports (IUFRs) to be submitted by 45 days from the end of each four-monthly period.** The external audit report for each year of project implementation and retroactive financing will be submitted by nine months from the year-end.

[13] These BFIs comprise six micro-finance development banks (Rural Micro Finance Development Centre, Small Farmers Development Bank, Nirdhan Uthan Bank Limited, DEPROSC Laghubitta Bikas Bank Limited, Chhimek Laghubitta Bikas Bank Limited, and Shawalamban Laghubitta Bikash Bank Limited), and three commercial banks (Bank of Kathmandu, Laxmi Bank Limited, and NIC Asia Bank).

D. Disbursement

54. **The disbursements from the World Bank will be based on statements of expenditures (SOEs).** To the extent possible, direct payments will be made, and for remaining expenditures, the Government consolidated funds (treasury single account) will be used for prefinancing eligible expenditures. An advance not exceeding the threshold specified in the Disbursement and Financial Information Letter (DFIL) will be transferred to the Designated Account (DA) to be opened in Nepal Rastra Bank. Direct payment to various payees or reimbursement to the Government treasury can be made from the advance provided in the DA. Direct payment to various payees or direct reimbursement to the Government treasury can also be requested directly from the World Bank for amounts above the threshold specified in the DFIL. The disbursement for the decentralized level will be managed by the PMU based on the reports provided by the cluster offices for the expenditures prefinanced from the Government treasury. If required, the PMU will also manage direct payments for the cluster offices.

E. Procurement

55. **Assessment carried out by the World Bank revealed that though the MoLD is a recently established ministry, it has the experience of implementing IDA-financed projects such as the AFSP, Nepal Avian Flu Control Project, Nepal Zoonosis Control Project, and PACT when the two ministries were together.** Thus, there is considerable inherent experience within the new ministry to provide the required fiduciary support. However, given the transformation taking place in governance, there is a need to hire a Procurement Consultant within two months of the project effectiveness to provide support during the initial stages and on a need basis thereafter.

56. **Major procurement activities are expected to be carried out through the PMU while some procurement of office equipment and goods will be carried out by the DLSUs.** The project will need to engage a procurement consultant within two months of effectiveness of the project for assisting in the procurement management and ensuring that the project procurement follows the procedures agreed in the financing agreement.

57. **Key procurement activities include civil works, goods, and non-consulting services and consulting services.** These will include (i) selection of consultants for developing the LMP, policy documents, ICT, and so on; (ii) procurement of goods, including vaccines, fertility materials (semen), dairy animals (sires and dams, breeding bucks and does, and so on), laboratory equipment, vehicles, and so on; and (iii) procurement of works, including laboratory strengthening, slaughter houses, training halls, and so on. Locally available goods and works required for the DLSUs will be procured by themselves, and procurements of other goods, works, and consulting services will be carried out by the ministry.

F. Safeguards

Environmental Safeguards

58. **The project is a category 'B' project and triggers World Bank environmental safeguard policies on Environmental Assessment (OP/BP 4.01), Forests (OP/BP 4.36), Natural Habitats (OP/BP 4.04) Physical Cultural Resources (OP/BP 4.11), and Pest Management (OP/BP 4.09).**

59. **An ESMF has been developed according to the policy on Environmental Assessment (OP/BP 4.01) to guide the implementing agency to undertake full environmental and social management in**

the proposed project. Because the exact locations of the SPs are yet to be established, the possibility of project SPs being located in protected areas or sensitive natural habitats cannot be ruled out. Hence, Natural Habitats (OP/BP 4.04) has been triggered. The policy on Forests (OP/BP 4.36) has been triggered considering that the project activities may include investments to develop grazing landscape, reforestation, and agro-forestry, which might affect the quality and health of the forests. The policy on Physical Cultural Resources (OP/BP 4.11) has been triggered as a precaution, because the SP activities are expected to traverse areas of cultural or historical importance and some excavation work is envisaged. Chance-find procedures will be included in all infrastructure contracts and in the environmental and social safeguard framework documents.

60. **The ESMF provides guidance to detail preinvestment works/studies (such as environmental and social screening, environmental and social assessment, environmental and social management plans, and so on).** It provides a set of steps, processes, procedures, and mechanisms for ensuring adequate level of environmental and social consideration and integration in each investment in the SP cycle and describe the principles, objectives, and approach to be followed to avoid or minimize or mitigate adverse impacts. The ESMF includes an exclusion list and a simplified screening checklist, which will be used to determine what types of environmental and social assessment are required for each and every proposed initiative.

61. **The policy on Pest Management (OP/BP 4.09) has been triggered considering that some of the project intervention like VS, the upgrading of breeding stations, and establishment and accreditation of laboratory may involve use of pesticides and chemicals.**

Social Safeguards

62. **It is likely that the project will involve some small-scale civil works such as the construction and renovation of office buildings, community infrastructure such as chilling centers, milk and meat processing facilities, training hall, livestock market, and slaughter houses, which will be carried out at the SP level on public lands.** Hence, the World Bank policy on Involuntary Resettlement (OP/BP 4.12) is triggered. To avoid any potential adverse impacts, a Resettlement Policy Framework has been developed as part of the ESMF to guide the implementing agency to undertake the required social planning namely screening, social assessment, and preparation of Resettlement Action Plans (RAPs).

63. **The population structure of Nepal is complex with many caste and ethnic minorities including poor and vulnerable groups living together, particularly in many rural communities.** The high population percentage of indigenous people accounting about 37 percent at the national level and several scattered settlements with mixed population across many potential Nepal Livestock Sector Innovation Project (NLSIP) Municipalities suggests that the project triggers the World Bank policy on Indigenous Peoples (OP/BP 4.10). Taking this into account, a Vulnerable Community Development Planning Framework (VCDPF) has been developed as part of the ESMF that fully guides the planning and implementation of mitigation measures to avoid and mitigate any potential adverse impacts that the project might cause to the indigenous people during the project implementation. When required, the VCDPF will guide the preparation of specific Vulnerable Communities Development Action Plans.

G. Citizen Engagement

64. **The project will rely on the partnership with the local civil groups/organizations such as women groups, producer associations, producer groups, and cooperatives and engage in a variety of citizen engagement activities.** Extensive communications and outreach campaigns will mobilize local-

level actors, including the community-based organizations, para-veterinarians, and social mobilizers, who are permanently based in the project locations. The project will invest in a grievance redress mechanism (GRM) so that the stakeholders can channel their voice and concerns or provide feedback through a properly designed system to elicit response from the Government. In addition, public opinion will be sought aggressively when updating/formulating the livestock policies and acts and provide stakeholders (producers, cooperatives, and farmers) with access to services through improved extension and outreach services. The salient features of the project to engage larger public, thus, are (i) a decentralized approach to ensure demand-driven services to the beneficiaries; (ii) institute feedback mechanisms including public engagement in the baseline, midline, and impact studies; and (iii) establishment of a functional GRM (detailed in the PIM).

H. Gender Considerations

65. **Given that a bulk of the agricultural operations is being carried out by women and their engagement is increasing with the migration of males in search of employment opportunities outside of their homes, the proposed project will ensure greater engagement of women in decision making in all planning and implementation of project activities.** Effort will be made to introduce agricultural tools and equipment that are women friendly (feminization of agriculture) besides deliberately focusing on women cooperatives, groups, and entrepreneurs to benefit from project interventions. At least 90,000 women will directly benefit from the project out of the planned 200,000 beneficiaries. The MIS will help track the progress on gender by producing gender-segregated data to inform the project. Female native social mobilizers will further help the project in reaching the women at the grassroots level.

66. **Public consultation and disclosure in accordance with World Bank safeguard policies.** Public consultations were conducted, with local and commercial farmers, District Agriculture Development Office (DADO), District Livestock Office (DLO) officials, and other stakeholders from October 2016 to December 2016 in three regions of Nepal. Their opinions and concerns have been taken into account while formulating the ESMF, which has been disclosed at the local governmental website on February 28, 2017 and the World Bank's InfoShop on March 1, 2017.

I. Climate Co-benefits

67. **Climate co-benefits were assessed for each project component and activity, and it is expected that the project will generate significant adaptation and mitigation co-benefits.**

J. World Bank Grievance Redress

68. **Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

ANNEX 1: RESULTS FRAMEWORK AND MONITORING

Project Development Objectives

PDO Statement

The Project Development Objectives (PDO) are to increase productivity, enhance value addition, and improve climate resilience of smallholder farms and agro-enterprises in selected livestock value-chains in Nepal.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measurement	Baseline		Targets					
					YR1	YR2	YR3	YR4	YR5	YR6
Indicator One: Productivity of targeted livestock commodities (milk, goat meat, C*hyangra*) among beneficiaries	☐	Percentage increase of average milk production per cow/buffalo	Cow = 450 L per year Buffalo: 640 L per year[14]		0	5	15	25	40	40
		Percentage increase in offtake rate expressed as carcass weight for goats	0%		0	10	20	30	40	40
		Percentage increase in *Chyangra* wool production	150–170 gm per year per goat[15]		0	10	30	50	80	80
Indicator Two: Increased sales of value added products in targeted value chains	☐	Percentage increase of sales value (aggregated over all the targeted value chains)[16]	0		0	5	10	20	25	30
Indicator Three: Farmers adopting climate smart agricultural technology (of which	☒	Number (in thousands, cumulative) (%)	**Total**	0	0	10	30	60	75	75
			Female	(0)	(0)	(20)	(30)	(45)	(45)	(45)

[14] Based on RRA carried out at the time of project preparation. Will be updated with the collection of baseline data in Year 1 of the project implementation.

[15] Average production of *Chyangra* wool is estimated at 150–170 gm per year. Will be updated when the baseline data is collected in Year 1 of the project implementation.

[16] Rate of increase of sales in targeted value chains; this indicator will be measured for every targeted value chain. However, only the average value over all the targeted value chains will be reported.

female)										
Indicator Four: Farmers reached with agricultural assets or services (of which female) [17]	☒	Number (in thousands, cumulative) (%)	**Total**	0	0	25	50	100	150	200
			Female	(0)	(0)	(20)	(30)	(45)	(45)	(45)

[17] This includes the farmers who would benefit from the vaccination campaign supported by the project.

Intermediate Results Indicators											
Component A: Strengthening Critical Regulatory and Institutional Capacity											
A.1 Livestock Master Plan updated and endorsed	☐	Yes/No		No	—	—	—	Yes	Yes	Yes
A.2 Client days of training provided (of which female)	☐	Number (cumulative) (%)	Total	0	500	1,500	2,500	3,500	4,500	5,500
			Female	0	(35)	(35)	(35)	(35)	(35)	(35)
A.3 Livestock Management Information System (LMIS) developed and operational	☐	Yes/No		No	—	—	Yes	Yes	Yes	Yes
Component B: Promoting Sector Innovation and Modernizing Service Delivery											
B.1 Number of Producer Organizations/Cooperatives newly established or formalized and offering an increased range of services to members	☐	Number (cumulative)		0	0	500	1,500	2,500	3,000	3,000
B.2 Incremental number of animals vaccinated against PPR and FMD through the project	☐	FMD for cattle and buffalo (Number in thousands, cumulative)		0	1,500	2,500	3,500	4,500	5,000	5,000
		PPR for small ruminants (Number in thousands, cumulative)		0	5,000	6,500	7,500	8,500	9,600	9,600
B.3 Beneficiary satisfaction rate with relevance, timeliness and effectiveness of services provided by the project for the livestock sector (of which female)	☐	%	**Total**	—	—	—	35	—	—	75
			Female	—	—	—	35	—	—	75
Component C: Promoting Inclusive Value Chains for Selected Livestock Commodities											
C.1 Dialog platform between actors of the targeted value	☐	Number (National) Number (Municipalities)		0 0	0 0	1 5	1 15	1 25	1 25	1 25

chains established and operational at national and Municipality levels										
C.2 Number of business plans financed by the project on a matching grant basis	☐	Number	0		0	50	125	250	400	500
C.3 Share of project beneficiaries with a livestock risk insurance policy (of which female)	☐	%	0		0	5	20	40	60	60
		(%)	(0)		(0)	(20)	(30)	(45)	(45)	(45)
Component D: Project Management and Knowledge Generation										
D.1 Grievances registered related to delivery of project benefits satisfactorily addressed	☒	%	**Total**	0	50	55	60	65	70	75

Indicator Description

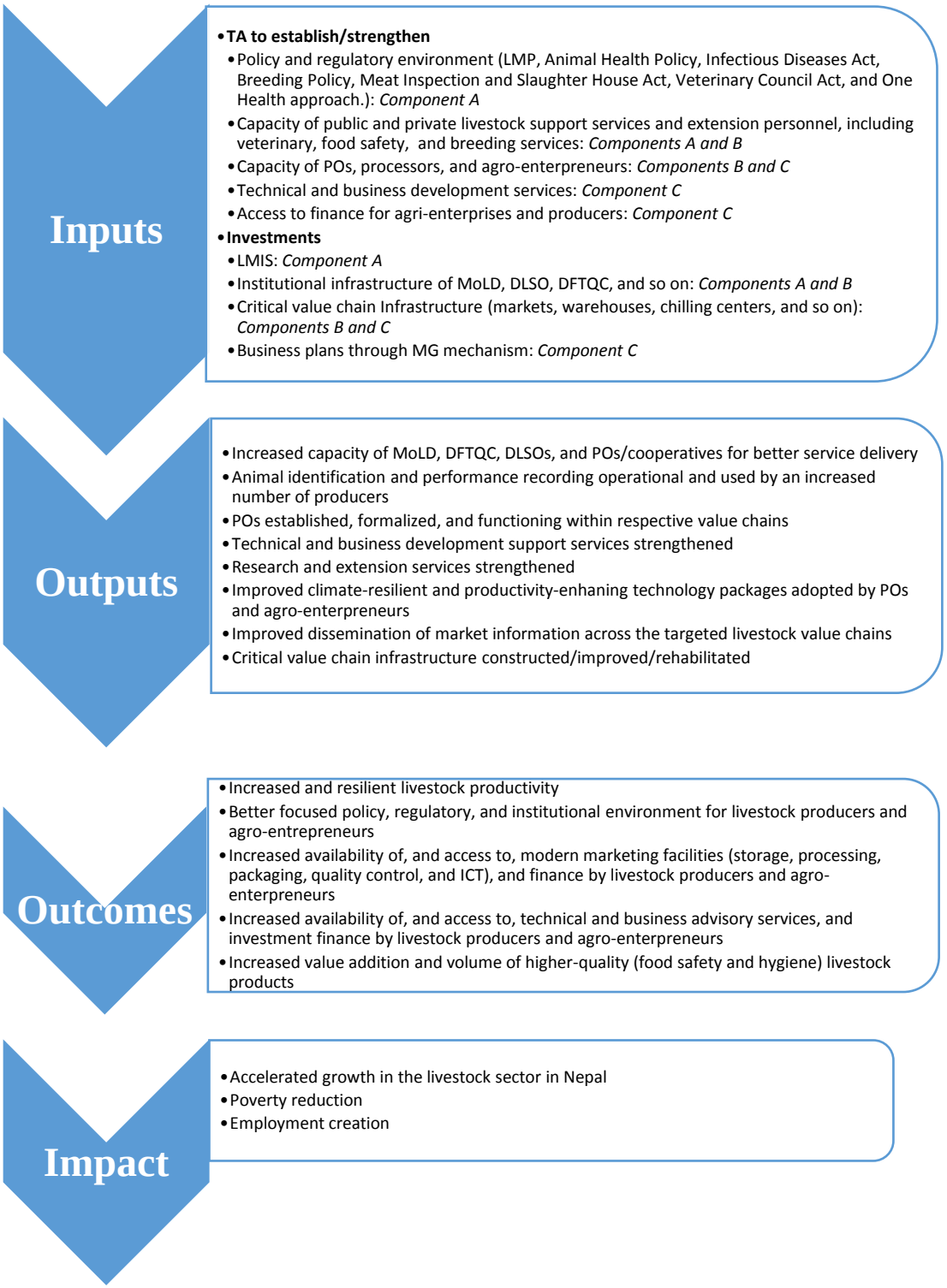
Project Development Objective Indicators					
Indicator Name	**Description (Indicator Definition and so on)**		**Frequency**	**Data Sources and Methodology**	**Responsibility for Data Collection**
Indicator One: Productivity of targeted livestock commodities (milk, goat meat, *Chyangra*) among beneficiaries	Percentage increase of milk production per cow/buffalo	This indicator measures the productivity of dairy animals (cow and buffalo) at herd level, among project participants. It is computed as the total volume (liters) of milk produced in a year divided by the standing animal population (including males and females not in production). It reflects both productivity at animal and herd levels, for example, the share of animals that are in production.	Annual	Progress report, annual project report, Household Survey, and technical and economic monitoring	NLSIP PMU as well as LMIS function of MoLD
	Percentage increase in offtake rate expressed as carcass weight for goats	This indicator measures the productivity increase of meat goats among project participants. It is computed as the total volume (kg) of carcass weight produced in a year, divided by the standing goat population (all cohorts). It reflects productivity at animal (daily weight gains) and herd levels (reproduction performance and improved health), as well as improvement in dressing performance.			
	Percentage increase in *Chyangra* wool production	This indicator measures the productivity of *Chyangra* goats. Grams of *Chyangra* wool produced per year / baseline value × 100			
Indicator Two: Increased sales of value added products in targeted value chains		This indicator measures the relative increase in the value of sales in targeted value chains. For each targeted value chain, the increase in the value of sales is calculated as the ratio of the value of incremental sales of value added livestock products during the reporting year (the total value of sales by	Annual	Progress report, annual project report, Household Survey, and technical and economic monitoring	NLSIP PMU as well as LMIS function of MoLD

		direct beneficiaries during the reporting year minus the total value of sales in the baseline year) and the value of sales at baseline.			
Indicator Three: Farmers adopting improved climate smart agricultural technology (of which female)	Total Female	This indicator measures the number of beneficiaries in target Municipalities who have adopted a CSA technology promoted by the project and described in the PIM. The baseline value for this indicator will be zero.	Annual	Progress report, annual project report, Household Survey, and technical and economic monitoring	NLSIP PMU as well as LMIS function of MoLD
Indicator Four: Farmers reached with agricultural assets or services (of which female)[d]	Total Female	This indicator measures the number of beneficiaries in targeted Municipalities who were provided with agricultural assets or services by the project. The baseline value for this indicator will be zero	Annual	Progress report, annual project report, Household Survey, and technical and economic monitoring	NLSIP PMU as well as LMIS function of MoLD
Intermediate Results Indicators					
Component A: Strengthening Critical Regulatory and Institutional Capacity					
A.1 Livestock Master Plan updated and endorsed		This indicator ensures that the existing LMP that was prepared more than a decade ago has been updated and endorsed by the concerned authorities for effective implementation.	Once	Final updated and endorsed plan	NLSIP PMU in consultations with the concerned ministries and stakeholders
A.2 Client days of training provided (of which female)		This indicator measures the number of client days of training provided, that is, the number of clients who completed training multiplied by the duration of training in days (including the percentage of female beneficiaries who received the training).	Annual	Progress report and annual project report	NLSIP PMU and LMIS
A.3 Livestock Management Information System (LMIS) developed		This indicator measures whether the LMIS has been developed and is in operation to support the collection and dissemination of livestock information	Third year and yearly afterward	Progress report and annual project report	NLSIP PMU and M&E team at NLSIP

and operational		from the project through ICT platform.			
Component B: Promoting Sector innovation and Modernizing Service Delivery					
B.1 Number of Producer Organizations/Cooperatives newly established or formalized and offering an increased range of services to members	Number	Formalized POs are registered entities. This includes the community-based groups for the management of rangelands and pastures. New services may include technical training and extension, wholesale acquisition of inputs, microfinance, and so on.	Annual	Progress report, annual project report, and Household Survey	NLSIP PMU and M&E team at NLSIP
B.2 Incremental number of animals vaccinated against PPR and FMD through the project	Number	Number of animals effectively vaccinated for the two diseases	Annual	Progress report, and annual project report	NLSIP PMU and M&E team at NLSIP
B.3 Beneficiary satisfaction rate with relevance, timeliness and effectiveness of services provided by the project for the livestock sector (of which female)	Percentage	Number of surveyed beneficiaries satisfied with services as a proportion of surveyed target beneficiaries. This includes services provided by Government, producers groups, cooperatives, and private practitioners.	Every 2 years	Household Survey	NLSIP PMU and M&E team at NLSIP
Component C: Promoting Inclusive Value Chains for Selected Livestock Commodities					
C.1 Dialog platform between actors of the targeted value chains established and operational at national and Municipality levels	Number	This indicator measures the total number of dialog platforms established at national and Municipality levels for consultation between the Government and key stakeholders (POs, buyers, traders, processors, and participating BFIs).	Annual	Progress report and annual project report	MoLD and NLSIP PMU
C.2 Number of business plans financed by the project on a matching grant basis	Number	This indicator measures the cumulative number of contracts signed and SPs completed under the MG scheme.	Annual	Progress report and annual project report	NLSIP PMU

C.3 Share of project beneficiaries with a livestock risk insurance policy (of which female)	Percentage	This indicator measures annually the percentage of total project beneficiaries who have taken up a livestock risk insurance policy (including the percentage of female beneficiaries)	Annual	Progress report and annual project report	NLSIP M&E and PMU
Component D: Project Management and Knowledge Generation					
D.1 Grievances registered related to delivery of project benefits satisfactorily addressed		The indicator measures the proportion of grievances received by the GRM set up by the project that are satisfactorily addressed within the standard time frame set up by the GRM system	Semi-annual	Progress report, annual project report, and frequent surveys using ICT (tablet, and so on)	NLSIP as well as M&E function of MoLD through LMIS

Results Chain NLSIP



ANNEX 2: DETAILED PROJECT DESCRIPTION

I. Project Description

1. **The project objective will be achieved by the following four components:**

Component A: Strengthening Critical Regulatory and Institutional Capacity (US$5 million, IDA)

2. **This component will focus on strengthening the ability of the MoLD and its agencies at the regional, Municipality and village levels, to develop/modify and enforce a policy and regulatory framework that strengthens the livestock sector.** Component A will be organized around three major themes: (i) sector policies and strategies, (ii) institutional capacity development, and (iii) establishment of an LMIS for knowledge generation and utilization. The interventions under this component will contribute to the PDO by helping to establish an enabling policy and regulatory environment that improves the delivery of demand-driven services to livestock producers (link to Component B) and provides adequate incentives for private sector investments in the livestock sector (link with Component C).

Subcomponent A.1: Policies and Regulatory Framework

3. **This subcomponent will support a comprehensive policy review, modification, updating, or developing of new policies that will aim at** (i) the preparation of the LMP, (ii) Animal Health Policy, (iii) Infectious Diseases Act, and (iv) Breeding Policy. Specific activities targeted for this are constituting working groups, expert reviews, stakeholder consultation, and surveys; drafting and/or updating the policies, acts, and regulatory framework; and making operationalization arrangements. The LMP will accord a high priority to addressing climate change mitigation and adaptation, in line with the recently approved ADS. In addition, the project will support activities (improving capacities and infrastructures) related to efficient implementation of the acts and policies that are already promulgated or on the verge of final approval. Particular attention will be given to the regulatory and institutional aspects of food hygiene and food safety regulations and their enforcement. The project will, therefore, provide implementation support for the following specific acts/policies/measures: (i) Meat Inspection and Slaughter House Act, (ii) Veterinary Council Act (iii), food safety measures, and (iv) One Health approach.

Subcomponent A.2: Institutional Strengthening

4. **This subcomponent will focus on strengthening the institutional capacity of government agencies to support the development of the sector.** Capacity enhancement needs assessment (CENA) will be carried out, which will focus on the following areas: (i) formulation of specific policies, regulations, standards, and their implementation; (ii) training needs at various levels of functionaries of the MoLD; (iii) planning and implementation of ICT-based LMIS; (iv) veterinary public health (VPH) capacity for effective implementation of food safety acts (related to livestock products) in collaboration with the Department of Food Technology and Quality Control (DFTQC); (v) promotion of climate-smart livestock production practices; and (vi) planning and implementation of livestock emergency preparedness programs. The target group for this assessment will be the functionaries of the MoLD, DFTQC, and the full range of value chain stakeholders including veterinary and livestock researchers and academics, aggregators and processors of livestock products, private and public input and service providers, farmers, and consumers. The CENA, among others, will build on the recent assessments by *Office International Des Epizooties* on the PVS and FAO on epidemiological and lab management capacity. Project assistance will be provided to selected government staff through degree and non-

degree related training in critical topics required for attaining long-term livestock development objectives of the country, to be completed within the project period.

Subcomponent A.3: Establishing Livestock Management Information System

5. **Accurate information on livestock production, animal movement, animal health, breeding, feeding, and milk collection and processing are critical elements for efficient and climate-resilient livestock development, planning, and monitoring.** Therefore, the project will invest in establishing a dedicated LMIS in the domains mentioned above. The system will also be used for facilitating the preparedness for national-, provincial-, and municipal-level monitoring of disease outbreaks and preparation of a provincial- or local-level response plans. Based on the capacity assessment, support will be made available to establish an ICT platform to cater to livestock information requirements. The same platform will be used to disseminate e-extension services to the farmers and assess effectiveness of services delivery, for example, of vaccination and artificial insemination (AI). Infrastructure strengthening in terms of required hardware, software, and human resources will be taken up at central, regional, and Municipality levels. A central-level unit will serve as an apex body to undertake the entire data management system such as data collection, quality control, storage, retrieval, analysis, monitoring, and data dissemination. In addition, the central unit will disseminate extension, management, and market information to the farmers on a periodic basis. The central and regional veterinary laboratories and epidemiological units will be linked to the entire system for gathering and disseminating real-time information on disease incidence and diagnostic results. These facilities will help to retrieve, analyze, and use information for central-, State-, and Municipality-level planning and monitoring. It will also provide the activity data for a more accurate estimation and reporting of climate vulnerability and GHG emissions and reduction thereof. Grassroots-level workers such as public and private veterinarians, paraprofessionals, and community service providers will be provided with tablets to provide primary data on a real-time basis. The project will invest in animal and herd unique identification that will also provide a system of traceability.

6. **The project is expected to generate adaptation benefits through the implementation of adaptation activities stipulated in A.1, A.2, and A.3 above, which carry a total budget of US$5 million.**

Component B: Promoting Sector Innovation and Modernizing Service Delivery (US$40 million, IDA)

7. **This component aims to enhance the capacity of key stakeholders along the selected livestock supply chains to develop, disseminate and adopt best practices.** Most activities under this component will be implemented at farm and cooperative/producer group level, and will involve government agencies whose capacity is being strengthened under Component A. It will also contribute to environmental sustainability and particularly GHG emission reduction through promoting activities geared toward improved efficiency in animal production (e.g. through animal nutrition, improved feed efficiency, reduction of disease incidence, and genetic improvement). Activities under this component will strengthen the resilience toward the negative impacts by improving access to quality inputs and outreach services, promotion of feed-efficient and improved livestock breeds, strengthening the capacity of cattle and goat breeding centers, and improving the knowledge of extension workers on climate change and adaptation objectives in the training curricula. The component will also directly address the issue of feed resources and their vulnerability and adaptation to climate change.

8. **In line with good practices from other livestock projects, the component will strengthen the capacity of multiple types of extension agents to deliver better advisory services more efficiently, and**

will include (i) capacity-building support such as use of ICT, training in subject matter and emerging issues, training in climate-smart practices, disease diagnosis and treatment, animal hygiene, and provision of tool kits for public extension staff like livestock officers, junior technicians and junior technician assistants in the Municipalities and their outreach service units, (ii) increase in the number of adequately trained community-based private service providers (for example, community animal health workers/local service providers, para-veterinarians, and agro-vets), and (iii) support to the cooperatives in the delivery of advisory services to their members.

Subcomponent B.1: Support to Producers' Organizations

9. **This subcomponent will support the development of producer groups in the selected value chains.** The project will support the expansion and growth of current groups and, where needed, the establishment of new cooperatives and producers groups. Informal groups, especially goat farmers that remain largely unorganized and scattered, will be organized into groups and subsequently registered as producer associations and cooperatives. The project will invest in strengthening the capacity of these POs for them to be able to take advantage of the evolving markets for livestock. These efforts are expected to improve producers' access to improved technologies, market information, and economies of scale to access product markets, financial services, and rural infrastructure.

10. **The project will develop the strategy of intervention and identify the target groups and beneficiaries to be supported and activities to be undertaken to be supported based on the systematic institutional mapping.** Based on this mapping exercise, the members will benefit from various training programs covering topics such as group dynamics, leadership and group management, assessing production costs, basic accounting systems, and so on.

11. **For the project in the hills and mountain regions, the project will promote pasture and fodder/feed management initiatives that fit in with the local climate.** The subcomponent will facilitate the development of management plans that will contribute to sustaining production growth while generating positive environmental outcomes, such as soil carbon sequestration, biodiversity conservation, and replenishment of aquifers. Depending on demand and demonstrated viability, the project may fund the development of certification schemes for products originating from sustainably managed resources, such as soil carbon sequestration, biodiversity conservation, and replenishment of aquifers.

12. Cooperatives and rangeland management groups will be supported toward the development of investment plans for primary production and supply chain development, including market analysis, technical specifications, budgeting, and business plans..

Subcomponent B.2: Modernizing Service and Input Provision Systems

13. **This sub component will support the modernization of livestock extension services by enhancing the quality and targeting of advisory services provided by public extension agents and improving the complementarity of private and public extension providers.** The project will support the delivery of animal health services, feeding and nutrition, herd improvement, and breeding services (animal breeds and fodder seed) in the project area for dairy animals, meat goats, and *Chyangra* goats. This will include support for breeding and veterinary services, feed optimization, and quality and food safety related services. One important activity this subcomponent will support is the capacity building of the service providers, which will also include the financing institutions to build their capacity to achieve project objectives

14. **Animal health and VPH services investments will focus on enhancing the quality and targeting of these services provided by public agents while pursuing greater involvement and complementarity with private service providers.** Project investments will focus on reducing productivity losses due to mortality and morbidity by: (i) targeting FMD, PPR, and parasites; (ii) addressing preventable management-related losses such as mastitis and pneumonia; (iii) enhancing engagement with the private sector for effective farm-level delivery; and (iv) reducing biosecurity risks, enhancing food safety, and building associated capacity of stakeholders in animal health and VPH. The latter will be enabled by pursuing a One Health approach effectively engaging with stakeholders from other departments such as the DFTQC and ministries (for example, the Ministry of Health). Activities will focus on three broad areas of engagement as follows:

i. **Disease surveillance and prevention will be enhanced through** (i) training on epidemiology, disease diagnosis, and laboratory procedures; (ii) more efficient quality control enabled by installation of a laboratory information management system at the Central Veterinary Lab; (c) training on system use including proper recording and tracing of field samples; and (d) training and equipping field workers for sample collection.

ii. **Control programs and delivery will support the following four areas:** (i) investment in delivery mechanisms including cold chains; preparation of a drug use monitoring system; para-veterinarians and community animal health workers recruited, trained, and equipped; incentive schemes for animal health workers for vaccination; reagents, chemicals, equipment, and air handling system to upscale the PPR vaccine production capacity; quality assurance for vaccine including financing International Organization for Standardization certification for the vaccine production facility; financing FMD vaccine purchase; and linking to an international reference laboratory for accreditation of PPR and FMD testing protocols and procedures; (ii) biosecurity will be enhanced with a targeted plan for the priority value chains; training for stakeholders on biosecurity practices; standard operating procedures (SOPs) for biosecurity of semen stations and field-level delivery; SOPs for milk pooling stations, markets, and slaughter facilities; and disinfectants and sprayers for field workers and at border points; (iii) improved inter-sectoral coordination at all levels will be enabled through the preparation of a One Health strategy to address disease outbreaks and risks, coupled with the development of preparedness plans to deal with emergencies (disease outbreaks, drought, and earthquakes); and an early warning system to inform risk and feed into a community-based response system, which will include equipping village-based health workers; and (iv) introduction of a herd health program to optimize animal health and herd productivity through better management practices and limit food safety risks due to improper drug use.

iii. **Human capacity development support will** (i) develop/update national standards and curriculum for livestock professionals including veterinarians and para-veterinarians; (ii) implement a sustainable training program for these agents; (iii) administer training programs for community animal/local provider, enabled by ICT and specialized advisory services; and (iv) support training and extension through a farmer field school approach.

15. **Support to breeding services will invest in genetic improvement programs supporting cattle, buffalo, and goats, as well as improved forage and fodder.** Breeding activities supported by the project will include (i) development of an animal identification and performance recording system and (ii) support to breeding services for genetic improvement of cattle, buffalo, and goats; strengthening of

select breeding stock multiplication centers for cattle, buffalo, and goats; and frozen semen production and delivery. The project will rely more on selection and natural service, with particular emphasis to limit inbreeding. The project envisages to deploy AI approaches strategically in multiplier herds (for example, goats to produce crossbred bucks), breeding stations (to produce better quality bulls for natural service to create crossbred dairy and purebred Murrah), and select dairy producers in the Tarai (for upgrading and crossbreeding). By strengthening breeding services, the project will contribute to the development of breeds that are more resilient and adapted to the impact of climate change. In terms of plant genetic resources, the subcomponent will promote local production of improved seeds for forage and fodder by providing support to the private sector, cooperatives, or communities for seed multiplication and dissemination to the producers. Animal identification and performance recording will be supported through the establishment of an animal identification and performance recording system for the dairy farms participating in the project. The central information management system will be supported through Component A, while this subcomponent will provide support at the decentralized and grassroots level through the provision of identification and performance recording material and tailored training for farmers and extension workers. This training will be closely followed up by the project to ensure that key indicators are objectively and systematically measured and related data including parentage, breed characteristics, and test events are collected, recorded, calculated, and stored.

16. **Genetic improvement of dairy animals** will be guided by the breeding policy and involve performance evaluation and selection of local breeds, introduction of exotic breeds for crossbreed development, and buck exchange to limit inbreeding. Breeding stock multiplication centers will be strengthened in partnership with the private sector. A feasibility analysis will be undertaken to guide semen production investments for dairy animals and the development of infrastructure supporting AI delivery where it is deemed viable based on the outcome of the analysis. Para-veterinarians and local service providers/community animal health workers will be trained and equipped to deliver services and utilize identification and performance recording data to enable selection of the best animals that will be used as breeding stock. Infrastructures and delivery mechanisms such as liquid nitrogen sourcing/production, storage (including frozen semen) facilities at regional stations, and delivery systems to AI centers will be renovated and upgraded. SOPs for breeding services delivery will be developed. Genomics information enables selection of imported semen on the basis of production and functional traits such as disease resistance and feed efficiency in addition to production. Regarding goat production (meat and *Chyangra*), the subcomponent will train smallholders and facilitate their access to improved-breed animals managed within producer groups, as a revolving asset. The project will focus the breeding strategy toward the selection of breeding animals that are regionally adapted, especially under extensive and marginal production systems. Selected members within the farmers' groups will be identified, trained and promoted as a breeder to undertake performance recording and production of breeding males. The selected breeding males will become a breeding input to another region and vice versa, which could keep a control on inbreeding.

17. **Feed base and animal ration balancing.** Feed, lack of optimizing the use of locally available feed resources and deficient supplementation to provide balanced rations are major causes of low productivity and seasonality of the production. To address these issues the project will assist the MoLD to develop and implement a strategy for improving the supply of improved fodder and pasture seeds to the producers targeted under the project. Balanced ration will also contribute to reduction of natural fodder in addition to increased feed conversion efficiency. To this end, the project will (i) promote good practices in climate change resilient feed production, promote preparation and storage at farm level, and develop norms and quality standards for feed for the targeted value chains, and (ii) support the

MoLD's basic control activities to ensure the quality of feed and pasture seeds provided to the beneficiaries. Key activities to be undertaken include (i) the promotion of adapted feeding packages for cattle and goats (supporting stall and semi-stall feeding and benefiting also from silvi-pasture); (ii) development of appropriate silvi-pastoral models for the Hill and Mountain regions; (iii) optimizing feed use and supplementation regimes to dairy animals; (iv) development of inventory of locally available feed resources in the project area; and (v) development of seed banks for forage and pasture germplasm, managed by POs, cooperatives, or private entrepreneurs, who will ensure supply of improved pasture seeds to the project beneficiaries. The subcomponent will promote local production of improved seeds for forage and fodder. It is envisaged that seasonal and perennial fodder production will be promoted on about 30,000 ha, and that fodder trees will be allocated 5 per adult goat and cover about 200 ha. The project will also support about 70 nurseries for the production of seedlings, and promote fodder production, processing and storage among dairy producers. In addition, the project also proposes to support community pastures management to enhance the fodder availability in the hilly regions.

Subcomponent B.3: Strengthening Farmers' Training and Extension Services:

18. **This subcomponent will support activities in two areas:** (i) the revision of curriculums for and proposed by public extension workers and training centers and (ii) the training and organization of frontline extension workers.

19. **Curriculum development.** Based on an assessment of current training curriculums and a gap analysis differentiated by stakeholder groups, revised and/or new training curriculums will be prepared. Their development will be driven by identified needs, and draw on local and international lessons learned and latest research results. Where adapted, the curriculums will make use of ICT. Specific curriculums will be developed for a range of target groups, including: DLS staff, producers, technical staff in cooperatives, and service providers.

20. **A comprehensive MoLD handbook for livestock extension practitioners will be developed.** It will include updated Good Livestock Management Practices and Good Veterinary Practices and emphasize climate change adaptation and mitigation technologies and practices to improve, among others, animal husbandry, rangeland and pastures management, and product handling and processing.

21. **For project areas in the hills and mountain regions, the curriculum will promote a community-based approach to adaptive management of rangelands and pastures, taking into account the necessity to continuously adjust the carrying capacity of livestock in fragile environments.** In this regard, the project may coordinate with the Climate-Smart Village program currently put in place by the GoN, in collaboration with the Consultative Group on International Agricultural Research Program on Climate Change, Agriculture and Food Security.

22. **Capacity building of frontline extension agents** will take place at both Municipality levels and below. Currently, only few dairy cooperatives are providing technical services to their members, but this is far from sufficient. Thus, the project will enhance the skills of these service providers from both private and public institutions for effective service delivery.

23. **Municipality-level service centers (MLSCs)[18] will be supported by the project, with the aim to provide extension services to producers that do not belong to cooperatives and producer groups and in remote areas where private service providers cannot earn enough income to be sustainable.** The proposed trainings will use the curriculums revised by the project and, drawing on lessons learned from the AFSP, adopting the farmer field school approach to build skills of farmers. Each MLSC in the project area will be equipped with a small information technology (IT) station with Internet connectivity and a computer terminal connected to a central MoLD database that serves as a repository for the knowledge generated on livestock (including from relevant NARC agencies and research stations, as well as global research providers). In addition, the subcomponent will assess the relevance of introducing the use by service providers of electronic tablets to improve the efficiency of livestock advisory services through on-farm, real-time, two-way knowledge and information sharing between the farming community and the public extension (and research) service, aggregate vaccine needs and support M&E.

Component C: Promoting Inclusive Value Chains for Selected Livestock Commodities (US$30 million, IDA)

24. **This component seeks to develop a more commercial-oriented approach for selected livestock subsectors and to contribute to import substitution (for dairy products and goat meat) and export promotion (for *Chyangra* cashmere) by improving the productivity and value addition within the targeted value chains.** The component will directly contribute to the PDO by supporting the integration of smallholder livestock farmers in those value chains. The component will focus on improving smallholders' access to markets and on strengthening the backward and forward links among value chain actors.

25. **This component envisages to establish PPs between POs such as cooperatives; buyers such as agri-businesses; micro, small, and medium enterprises; and finance and insurance institutions.** The PPs will be supported through the establishment of an MG mechanism for selected, growth-oriented, and income-generating initiatives, while facilitating access to financing and risk insurance for investing in business plans developed by the POs and livestock agro-entrepreneurs. The business plans will also include identification of key risks associated with each value chain, including weather- and climate-related risks and measures to mitigate these risks. The project will also look for opportunities to support new income-generating value chains utilizing agriculture products and practices better adapted to climate risks, such as more drought-resistant varieties and wider adoption of climate-smart farming systems. In terms of financing, the project envisages to partner with BFIs for loans. In March 2017, an assessment was initiated to preidentify potential BFIs based on their key financial data, ownership and management structure, audit and internal control mechanism, MIS, and experience of working with development partners/agriculture development. Preliminary results indicate that a total of nine interested BFIs complied with major regulatory requirements/ratios such as minimum capital requirement, capital adequacy ratio, financial resources to net worth (in case of micro-finance development banks), liquidity, non-performing loan ratio, credit to capital and deposit ratio (in case of commercial banks), and unqualified audit reports by statutory auditors. These BFIs have been retained as potential partners in the project.[19] These BFIs are present in most of the Municipalities that fall under

[18] MLSCs are the Livestock Service Centers which were under the District Livestock Offices before.

[19] These BFIs comprise six micro-finance development banks (Rural Micro Finance Development Centre, Small Farmers Development Bank, Nirdhan Uthan Bank Limited, DEPROSC Laghubitta Bikas Bank Limited, Chhimek

the four clusters and are willing to provide services to the project beneficiaries. The selection criteria and mechanisms for POs and PPs/business plans will be detailed in the PIM.

26. **The component will include two subcomponents:** (i) development of productive partnerships, and (ii) financing livestock value chains. This component will build on experiences gained through the past projects in the country and successful initiatives on PPs regionally and globally. Some of the activities that this component will support include the development of live animal markets in select locations and the adoption of climate smart production and processing technologies including food safety (in conjunction with Component B). Investments will be tailored to achieve higher standards in handling from the point of production through transport, storage, and marketing to safeguard against postproduction losses, enhance shelf life, and meet food safety and hygiene standards demanded by the markets. Financing for the targeted value chains will be contingent upon the establishment of offtake arrangements between the POs and buyers. Specific guidelines and operational modalities will be developed in the PIM to efficiently implement the two sub components, including critical areas of considerations such as the detailed selection criteria, taking into account gender and youth dimensions, monitoring and supervision arrangements, and measures to ensure transparency in the decision-making processes regarding the formation of productive alliances and awarding the MGs.

Subcomponent C.1: Development of Productive Partnerships (PP)

27. **First, the subcomponent will finance the creation of a dialogue platform for consultation between the Government and key stakeholders (POs, buyers, traders, processors, and participating BFIs).** The dialogue platform will provide a mechanism for identifying key issues, setting priorities, and coordinating actions along targeted value chains as well as for promoting the investment climate and/or investment promotion for the livestock sector. The dialogue platform will be under the supervision of the MoLD and will support access to markets and IT by funding (i) market studies to better understand supply and the demand of the products of the targeted value chains to identify opportunities at the national, regional, and international levels; (ii) the creation of an online information system on markets, prices, services, and financial products; climate-smart technologies; POs; and so on that will be open to all actors across the selected value chains; and (iii) awareness raising and feasibility studies for the adoption of climate change mitigation and adaption practices throughout the value chains, including resilient feed and fodder crop cultivars, improved and irrigated pasture/rangeland, fodder management systems, energy efficiency at collection, transport, and processing levels, and waste management, including biogas plants, at farm and processing unit levels. The consultations in this dialogue platform will focus on pricing, norms, and regulations, and will feed into the policy and regulatory reform agenda supported under Component A.

28. **Second, this subcomponent will promote and enhance direct and sustainable partnerships between POs and buyers (traders, processors, and so on of milk, dairy, meat, and *Chyangra* wool to match supply of these products to market demand.** The PPs will be based on the following principles: (i) agreement on product quality and other characteristics (food safety, and so on); (ii) quantity to be produced and bought; (iii) delivery modalities: how the product will be delivered, when, and in what condition; (iv) payment modalities and price determination criteria; and (v) the buyer's contribution, such as TA, specific inputs, and arrangements for input reimbursement. BFIs are expected to play an

Laghubitta Bikas Bank Limited, and Shawalamban Laghubitta Bikash Bank Limited), and three commercial banks (Bank of Kathmandu, Laxmi Bank Limited, and NIC Asia Bank).

important role in these PPs as they are envisaged to co-finance the business plans developed by the POs through the provision of credit. To facilitate the involvement of BFIs and the provision of adapted financial services, this project will follow a two-pronged approach by (i) supporting capacity building of POs in the area of preparation of 'bankable' business plans for financing and (ii) supporting BFIs to develop adapted financial services and products for the targeted livestock value chains, including specialized TA tailored to BFIs in animal production/value addition credit appraisal and risk analysis.

29. **Third, food quality and safety support will** (i) be informed by a Hazard Analysis and Critical Control Points assessment for milk and goat value chains; (ii) provide stakeholder training on animal and product handling, which would emphasize hygienic and food safety practices; (iii) enable effective feed and food safety monitoring and assessment through the provision of field-level testing kits/technology to track adulteration and contamination; (iv) increase the capacity of regional and central DFTQC labs for food safety testing, building on the achievements by the PACT and AFSP; (v) develop a training, monitoring, and certification program for traders, butchers, and postharvest facilities and agents, including processors and retailers; and (vi) develop and implement a consumer knowledge and awareness program to stimulate market demand for safe and nutritious (quality) livestock products.

Subcomponent C.2: Financing Livestock Value Chains

30. To facilitate the inclusive development of the targeted value chains, this sub component will follow a two-pronged approach:

i. **MGs.** The MGs will be accessible to eligible smallholder producers in groups or cooperatives, as well as agro-entrepreneurs, to finance productive livestock investment business plans developed under Subcomponent C.1. The MG instrument is 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. Investment-grade business plans could include, among others, group/cooperative infrastructure (for example, livestock handling facilities, milk collection centers, milk cooling and processing equipment that are far more energy efficient than those currently used, feed pellet machines, packaging equipment, and so on), improved livestock genetics (for example, dairy cattle, meat goats, and *Chyangra* goats), and so on. MGs will also be provided to enable POs and small to medium-size agro-entrepreneurs to invest (under an approved business plan) in improved postproduction handling practices that improve environmental performance (including GHG emissions), reduce losses, and uphold the food quality and safety standards demanded by the markets. The business plans will be financed through a combination of an IDA-financing (50 percent), a contribution from the POs (minimum 20 percent in cash), and short to medium-term credit provided by participating BFIs (30 percent or more). A Manual of Administrative and Operational Procedures will be developed as a separate annex in the PIM for the administration of these MGs. A conditionality mechanism will be built into the MG to ensure that the SPs contribute to climate resilience and reduced emissions of GHG and water pollutants and will be screened for potential adverse effects on public health, as well as to ensure minimum gender participation within the grant recipients. To guide BFIs' involvement, the MG mechanism will adhere to the following principles, which will be detailed in the PIM: (i) participating BFIs will need to pass due diligence as prescribed by the GoN; (ii) BFIs will be prescreened to ascertain they follow prudential norms and solvability; (iii) the CfCA needs to be signed between the PMU (GoN) and participating BFIs,

specifying the modalities of the BFI's partnership with the project and this modality will also allow the PMU to conduct monitoring and supervision of SPs with or without prior notice; (iv) interest rate will be the market rate to avoid distortionary effects; (v) the BFI will provide the PMU with the final list of eligible SPs; (vi) based on the list of recommended SPs by the BFI, the PMU will make a decision in awarding the MGs with endorsement from the PMU; and (vii) in case of failure/default, the BFIs can recover the loan through first charge over beneficiary assets.

The eligibility criteria will include a financially and technically sound business plan detailing the investment costs and financing; the operational and general costs; technologies considered; targeted markets and input/output price assumptions; organizational and capacity-building needs and proposed activities; operational, environmental, and social risks and mitigation measures; a multi-annual cash projection (before and after financing through the grant; POs' own resources, and loans); a profitability analysis (comparing the 'with project' and WOP scenarios); and key indicators such as financial internal rate of return (FIRR), NPV, return on capital, and the profitability ratio (benefits before and after tax on sales).

Targeted categories of investments may include the following: (i) access to improved animal and plant (fodder) genetic material to adopt improved production technologies; (ii) construction or rehabilitation of storage/chilling facilities at the PO level; (iii) access to mechanization services or equipment to upgrade production and increase processed volumes; (iv) improved fodder and pasture management; (v) promotion of agro-forestry system to compliment fodder requirement which would help in sequestrating carbon; (vi) access to equipment and technologies increasing product quality during primary processing; (vii) access to modern processing equipment to add value to produce at the PO level; (viii) reuse and processing of crop byproducts as animal feed, livestock wastes, and by-products from food/beverage industries; (ix) energy-efficient cooling and processing units using heat recovery devices; (x) solar-powered cooling devices at farm level; (xi) energy-efficient transport units; (xii) covered manure storage and biogas plants on farms and slaughtering/processing units; and (xiii) provision of support on access to financial and insurance services, business management, market and marketing, IT, hygiene/food safety certification, and other technical productive services.

ii. **Market infrastructure.** The project will support market infrastructure rehabilitation to support a better integration of smallholders in select value chains and facilitate their access to market opportunities. The exact locations of these investments will be based on a Market Infrastructure Inventory and Needs Assessment to ascertain a clear need or public good requirement that is not being met by other infrastructure projects currently under implementation. These investments will particularly focus on market rehabilitation, which complement the business plans funded under the MG scheme. It is expected that these investments will promote the adoption of advanced quality management systems by exposing the POs to model live animal markets and handling and processing facilities. This will improve the overall food safety and hygiene conditions across meat and milk processing enterprises through demonstration effects. Waste collection and treatment will improve overall environmental conditions, reduce GHG emission, and generate renewable energy. These investments in different locations across the project area will serve as learning centers for different stakeholders to work together in improving the basic

infrastructures and marketing management practices and replicate the successful lessons across the country.

31. In addition to above, the project will aim at improving entrepreneurial business skills of the various actors across the targeted value chains to enhance their bankability and facilitate their integration in the commodity value chains. To that effect, the project will collaborate with, among others, International Finance Corporation (IFC) accredited training partners in Nepal, to customize and deliver relevant business advisory services from IFC's Business Edge learning suite and other relevant training modules, which will be adapted and tailored to the needs of different project beneficiary groups (for example, on Operations Management, Marketing Management, and Financial Literacy Management and Accounting). Added to this will be the new approach to provide advisory services on cleaner and efficient production systems, waste management along the entire livestock value chain, and access to livestock insurance. In fact, the project will accord priority to the selection of business development proposals that will have considered cleaner and efficient production systems.

32. The interventions described in sub component C2 above are envisaged as promising options to finance adaptation solutions for small and medium livestock producers, culminating to about US$8 million in climate adaptation and mitigation co-benefits.

Component D: Project Management and Knowledge Generation (US$5 million, IDA)

33. **This component will support all aspects of project management and implementation, including** (i) strategic and operational planning, execution, M&E of project activities, and the appropriate use of project resources; (ii) compliance with Safeguard Documents; (iii) implementation of public awareness and outreach campaigns; (iv) verification and reporting on project execution and impacts thereof; (v) establishment, operationalization, and maintenance of the PMU and DLSUs; and (vi) the preparation/attendance of project-related studies, workshops, and seminars generating knowledge derived from the project implementation experiences, including but not limited to mainstreaming climate-smart livestock practices, to be communicated to various public and private entities in a timely and effective manner.

34. **This component will support project implementation activities, including operating costs of the PMU mapped to the MoLD Secretary's office and will be responsible for ensuring that project activities are implemented in line with the provisions in the official project documents.** The PMU will be responsible for the day-to-day project management, implementation, fiduciary management, environmental and social safeguards management, overall communication, and M&E. The project will finance the establishment and operations of an M&E unit and recruitment of an environmental and social expert who will be an integral member of the PMU, to ensure the coordination, monitoring, and implementation of the safeguard instruments developed under the project across all components of the project. The specialist will be assisted by decentralized environmental and social experts in the targeted agro-ecological zones. The project will also finance trainings, workshops and seminars, study tours, and relevant studies identified during the project implementation. Possible studies could include, among others, a comprehensive review of the existing GoN Livestock Insurance Scheme so that an improved scheme could be introduced. Other studies could include a thorough analysis of other high-potential livestock value chains with opportunities for import substitution, export promotion, and smallholder inclusion (for example, yak cheese, hides and skins, or *Vyanglung* sheep farming for wool).

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

Project Institutional and Implementation Arrangements

1. **The borrower will be the Ministry of Finance and the executing agency will be the MoLD.** Implementation will take place initially in 271 Municipalities encompassing five States in four clusters and expand in phase-wise manner to cover additional States. The project duration will be six years to allow a realistic time frame for implementation as guided by the World Bank's Disbursement Projection Tool.

Project Management

2. **The project implementation mechanism will comprise** (i) a PSC, (ii) a PMU based in Kathmandu, (iii) DLSUs, one each in the four clusters, and (iv) 271 Municipalities around the selected clusters. Each DLSU will support an average of 80 Municipalities, and each Municipality will be supported with required human resources such as Veterinary/Livestock Officer and Junior Technician/Assistant.

3. **The PMU will consist of one Project Director (Joint Secretary level, Class I Officer), two Veterinary and Livestock Officers (Class 2 level), Finance Officer (Under Secretary level), Planning Officer, M&E Officer, and Administrative Assistant, all seconded from the Government.** The Project Director will be responsible for project operation and management and will have the authority to make decisions related to project administration and FM. In addition to the Government seconded staff, the project will finance a team of experts drawn from various disciplines (financial, environmental, market development/value chain specialist, sociologist, and M&E specialist) to provide technical, managerial, and administrative support.

4. **The responsibility of the DLSU will be to support the implementation of value chain activities as articulated in Component C.** The DLSU will be headed by a Coordinator (Class II level Officer) who will be supported by a Planning and Monitoring Officer (Class III), Livestock/Veterinary Officer (Class III level), and an Accountant (Class III level). In addition, the DLSU will be supported by a team of experts drawn from various disciplines to provide technical, managerial, and administrative support on need basis.

5. **At the lower level, project activities will be implemented by the DLSU in coordination with the relevant units within the local Municipalities.**

Roles and Responsibilities

6. **The PMU will be responsible for** (i) preparing and approving the Annual Work Plan with inputs from beneficiaries, key stakeholders and partners; (ii) overseeing overall performance of the project and providing policy guidance; (iii) suggesting necessary adjustments based on M&E results; and (iv) approving. The PIM will detail the organizational and technical procedures that will govern implementation, including FM, procurement, environmental and social safeguards management, M&E, and the GRM.

Financial Management, Disbursements and Procurement

Financial Management

7. **FM capacity.** Though the MoLD has recently been established, the livestock-related services were previously carried out under the MoAD. An Under Secretary level Finance Chief and two Finance Officers are currently managing the Finance Unit. An accountant has also been assigned to the project. Based on the wide coverage of the project (271 Municipalities), it has been agreed that a dedicated Finance Officer will be assigned to the project within two months of project effectiveness. The dedicated Finance Officer will be a member of the PMU. The World Bank financing will also support the MoLD in developing its FM capacity. The provision for FM consultant has already been included in the PPA (already effective) to support the clients in project preparation, for example, the PIM, budget/cost projections, and so on. Also, for each cluster office of the project, an accountant has been agreed who will be supported by an FM consultant, on required basis, in each DLSU office. As most of the transactions are expected to be incurred at the PMU level, to the extent possible, the extent of FM consultant's support will be based on the transaction volume at the DLSU. Although the implementation delves down to the levels below Municipalities, FM of the project will be limited to the cluster office level. Any payments required for LSCs will be made by the respective PMU/ cluster offices. Therefore, finance staff are not required at the LSCs. Similarly, for the sub-grants component, the funds flow and FM thereof will be limited to the PMU/cluster offices.

8. **Planning and budgeting.** The proposed project will follow the Government planning and budgeting procedure. The Finance Unit of the MoLD will provide support in the preparation of the budget and the work program in coordination with the respective cluster offices. The project will hire the services of an FM consultant (expected to be hired by project effectiveness) to support the Finance Unit. The budget for the project has already been provided as a separate line item in the Red Book for the current FY2017/18. The annual work program has also been approved for FY2017/18 based on which the expenditures under the PPA provided by the World Bank will be incurred. The budget will be proposed through the Line Ministry Budget Information System, which ensures the detailed basis of required activities and nature of expenditures for the budget preparation. The PMU will provide budget authority to each cluster office with guidelines and specifications of activity/work programs and expenditure line items to ensure effective cluster-level FM. Implementation of these budgets and work programs will be monitored by the MoLD and reported on a four-monthly basis through the IUFRs.

Funds Flow

9. **A DA, managed by the PMU, will be established at Nepal Rastra Bank to facilitate disbursements.** Direct payments to payees can be made from the DA or directly from the World Bank. Reimbursements can also be made from the DA or directly from the World Bank for expenditures prefinanced from the Government treasury.

10. **The funds flow with the World Bank will be managed by the PMU, including for the DLSUs.** There will be no transfer of World Bank funds to the decentralized level. To the extent possible, most of the payments for the DLSUs will be made from the PMU. For the rest, the DLSUs will use the Government's treasury based on the budget authority, which will be reimbursed by the PMU. At the decentralized level, the assigned accountant will be managing project funds with support from the FM consultant. The decentralized-level funds flow management will be monitored from the PMU. Based on the reports received from the DLSUs, the PMU will reimburse decentralized-level expenditure amounts

to the Government treasury (through DA or direct reimbursement from the World Bank) and also manage direct payments for the cluster offices, if required. The Government's Financial Administration Regulation will be followed for overall funds management. Roles and responsibilities for fund management are clearly described in the regulation, based on which FM staff/ consultants (both at the central and decentralized levels) will help ensure that the project funds are effectively managed.

11. **Accounting, financial reporting, and internal controls.** The Government's cash basis accounting system will be followed. Based on the same, the IUFRs will be prepared on a four-monthly basis. Accounting information is maintained on a manual basis at the PMU. The MoLD will install an accounting software in the MoLD/PMU by December 31, 2017financed from counterpart funding, preferably Computerized Government Accounting System (software developed by Financial Comptroller General's Office) to ensure quality and timeliness of accounting and financial reporting. Details on the timeline, requirement, and the sequencing of the installation and use of the software will be specified in the PIM. The project accounts are required to be maintained separately by each cluster office and reported on a monthly basis to the PMU by the seventh day of each preceding month. Based on the report received of the expenditures incurred at the centralized level, the PMU will maintain accounts at the MoLD for all the project expenditures. The IUFRs with consolidated information from all of the cluster offices will be prepared by the PMU and submitted to the World Bank within 45 days from the end of each four-monthly period. The PMU will maintain a separate book of accounts against the separate budget line provided for the project. All the required ledgers including the DA Ledger, Credit Register, and so on will be maintained at the PMU. The internal control process of the Government will be applied, including internal audit. As per the Government policy, emphasis will be placed on ensuring that internal audit is conducted on a four-monthly basis, which is an important tool of the internal control system. The FM staff/ consultants hired for the project will help ensure timely and quality accounting and financial reporting and effective internal controls. The M&E unit of the MoLD will be responsible for overall monitoring supported by the PMU Finance Officer and FM consultant for financial monitoring. The required details such as monitoring mechanisms and periodicity for all project expenditures will be developed in the PIM. These and other specific aspects for effective project operations and internal controls required in addition to the Government's existing regulations will be included in the PIM.

12. **For the MGs, the funds flow will be limited to the PMU/cluster offices level.** The PMU will be documenting MGs' expenditures with the World Bank based on expenditure reports. The funds will potentially be mobilized through the BFI or other Nepal Rastra Bank licensed financial institution. For the MGs' eligibility, an investment plan including a loan from the financial institution will be required to ensure successful SP implementation. Involvement of the financial institution will also ensure adequate assessment of financial viability and support in the monitoring of SPs' progress. The details will be included in the PIM and the required arrangements will be included in the CfCA between the MoLD and the financial institution which will stipulate the modalities of collaboration. The required records to be maintained by the beneficiaries and reported to the respective DLSUs/PMU will be detailed in the PIM. The PIM will also include details of the monitoring mechanism with regard to sub-grants. The MGs' payment will be made in the bank account of the respective beneficiaries from the PMU.

13. **External audit.** The project financial statements including SOE and DA statements will be audited by the Office of the Auditor General (OAG). The external audit report for each year of project implementation will be submitted to the World Bank within nine months from the end of each fiscal year. To avert delays in audit report submission, the PMU will coordinate with the OAG by May of each year to ensure that the project's audit (including decentralized level expenditures) is scheduled on time. There are no overdue audit reports from the MoLD.

14. **Supervision plan.** Project implementation progress will be closely monitored by the PMU and the World Bank. Key FM fiduciary work includes (i) implementation support to the project including participation in supervision missions and informing the task team of FM issues or required improvements and (ii) review of financial/audit reports and preparing summaries of such reports for further action if required.

15. **The integrated fiduciary risk is assessed as 'Substantial' considering the scope of the project while the implementing agency is recently established and gradually developing its fiduciary capacity.**

Disbursements

16. **Allocation of credit proceeds.** Disbursement under the proposed funding will be made as specified in Table 3.1 which indicates the amounts and percentages of financing.

Table 3.1. Disbursement Table

Category	Amount of the Credit Allocated (Expressed in US$)	Percentage of Expenditures to Be Financed (Inclusive of Taxes)
(1) Goods and works under Components A, B, C (other than C.2(a)), and D of the project	32,500,000	85
(2) Non-consulting services, consultants' services, training and workshops under Components A, B, C (other than C.2(a)), and D of the project	19,000,000	85
(3) Incremental operating costs under Components A, B, C (other than C.2(a)) and D of the Project	3,000,000	72
(4) MGs under Subcomponent C.2(a) of the project	25,000,000	50 (of amounts disbursed)
(5) Refund of PPA	500,000	Amount payable pursuant to Section 2.07 of the General Conditions
TOTAL AMOUNT	80,000,000	

17. **Disbursement arrangements.** The disbursements from the World Bank will be based on SOEs. To facilitate disbursement, a segregated DA in U.S. dollars will be opened at Nepal Rastra Bank. The DA will be operated under joint signatures of the designated officials of the MoLD. An advance not exceeding the threshold specified in the DFIL will be provided in the DA. Direct payments to various payees or reimbursement to the Government treasury can be made from the advance provided in the DA. The DA will be replenished through Withdrawal Application to maintain the specified amount in the DA. For larger amounts above the threshold specified in the DFIL, direct payments to various payees or direct reimbursement to the Government treasury can also be requested directly from the World Bank.

Procurement

18. **Major procurement activities are expected to be carried out through the ministry's PMU while procurement of locally available goods will be carried out by the respective DLSUs.** Because the implementation of the project is expected to be carried out through several DLSUs, the project has detailed in the PIM the procurement management aspects as well to ensure uniformity and consistency in applying the World Bank guidelines or country procurement systems. Given the transformation taking place in the political scenario and governance structure, the project needs to hire a Procurement Consultant and maintain the services throughout the project period for providing procurement support to the PMU and DLSUs.

19. **The proposed NLSIP envisages providing support to beneficiaries and the private sector involved in the value chain developments in the dairy, *Chyangra* pashmina, and goat.** Other procurement activities include civil works, goods and non-consulting services, and consulting services. Key procurement activities include (i) selection of consultants for developing LMP, policy documents, ICT, and so on; (ii) procurement of goods including vaccines, fertility materials (semen), laboratory equipment, vehicles, and so on; and (iii) procurement of works including laboratory strengthening, slaughter houses, training halls, and so on. Low-value and locally available goods and works will be procured through the DLSUs, whereas high-value procurements of goods and works and consulting services will be carried out by the ministry.

20. **For procurement for goods, works, and non-consulting services, the implementing agencies will follow the World Bank's "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers," dated January 2011, revised July 2014 (Procurement Guidelines).** For consulting services, the project will follow the World Bank's "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers," dated January 2011, revised July 2014(Consultant Guidelines). Procurement of all National Competitive Bidding contracts will follow model bidding documents prepared by the MoLD acceptable to the World Bank. The borrower and the World Bank will agree on the project Procurement Plan before contracting for goods, works, or services. The project Procurement Plan will define (i) procurement or selection methods, (ii) estimated costs, (iii) prior-review requirements, and (iv) envisaged procurement timelines. The borrower has prepared a project Procurement Plan for the initial 18 months of implementation and submitted this to the World Bank. The Procurement Plan will be updated at least annually or as required through the online STEP (Systematic Tracking of Exchanges in Procurement) to adjust for actual performance, improved capacity, unforeseen risks, or other implementation stage realities. Contracts not subject to prior review will be subject to post review by the World Bank. Where appropriate to the size and number of contracts, post review will follow a sample-based approach.

21. **Summarized Procurement Plan.** The main works, goods, and non-consulting services to be procured in the project during the first 18 months are presented in the PIM.

Table 3.2. List of Consulting Assignments with Selection Methods and Time Schedule

Ref. No.	Description of the Assignment	Estimated Cost (US$, thousands)	Selection Method	Review by World Bank (Prior/Post)	Comments/Completion

Ref. No.	Description of the Assignment	Estimated Cost (US$, thousands)	Selection Method	Review by World Bank (Prior/Post)	Comments/Completion
1	Consulting services for conducting CENA	10	CQS	Post	
2	Consulting firm (international) for setting up genetic evaluation system for cattle, buffaloes, and goats; training national experts; and providing advisory	641	QCBS	Prior	
3	Consulting firm for goat semen production advisory and training	18	CQS	Post	
4	Individual Consultant - Project Technical Expert	150	INDV	Post	

Note: CQS = Selection Based on Consultants' Qualifications; INDV = Selection of Individual Consultant; QCBS = Quality- and Cost-Based Selection.

Environmental and Social (including safeguards)

22. The project is a category 'B' project and triggers the World Bank environmental safeguard policies on Environmental Assessment (OP/BP 4.01), Forests (OP/BP 4.36), Natural Habitats (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11), and Pest Management (OP/BP 4.09).

23. The project will cover 271 Municipalities in three distinct ecological zones. Thus, the impacts/issues associated with the project will depend on the physical characteristics of the location and the nature of project interventions. Because the project interventions are numerous, the associated impacts will be diverse involving wastewater management; slope and stability; deforestation; flooding; blockage of natural drainage; water availability; structural safety of service buildings (civil works); water pollution (arsenic, and so on); security of buildings; floods; solid, liquid, and hazardous waste management; and so on.

24. Considering this, an ESMF has been developed as per the policy on Environmental Assessment (OP/BP 4.01) to guide the implementing agency to undertake full environmental and social management in the proposed project. Because there is a possibility of SPs being located in protected areas or sensitive natural habitats, the policy on Natural Habitats (OP/BP 4.04) has been triggered. The policy on Forests (OP/BP 4.36) has been triggered considering that the project activities may include investments to develop grazing landscape, reforestation and agro-forestry which might affect the quality and health of the forest. The policy on Physical Cultural Resources (OP/BP 4.11) has been triggered as a precaution, because the SP activities are not expected to traverse areas of cultural or historical importance and some excavation work is envisaged. Chance-find procedures will be included in all infrastructure contracts and in the environmental and social safeguard framework documents.

25. With the country transitioning to federalism, there is a need to exercise precaution and preparations put in place to assess and mitigate the safeguard issues at the cluster and Municipality levels. The ESMF, which is a live document drafted for managing the environmental and social aspects, should be periodically revised/updated to accommodate the issues arising from transition. Capacity needs to be built up at the cluster and Municipality levels for addressing, managing, and monitoring the environmental and social issues. Furthermore, it will be crucial to educate and build the capacity of the newly elected local leaders on the safeguard aspects for smooth transition.

26. The ESMF will provide guidance on preinvestment works/studies (such as environmental and social screening, environmental and social assessment, and so on); provide a set of steps, processes, procedures, and mechanisms for ensuring adequate level of environmental and social consideration and integration in each investment in the SP cycle; and describe the principles, objectives, and approach to be followed to avoid, minimize or mitigate adverse impacts. This ESMF includes an exclusion list and a simplified screening checklist, which will be used to determine what types of environmental and social assessment are required for each and every proposed initiative. Accordingly, Environmental Management Plans/Social Action Plans for specific initiatives/SPs will be prepared for each intervention, if required.

27. The policy on Pest Management (OP/BP 4.09) has been triggered considering that some of the project interventions like VS, the upgrading of existing breeding stations, and establishment and accreditation of laboratories may involve procurement and use of veterinary chemicals, pesticides, and other animal health products. The provision of screening in the ESMF will determine whether integrated pest management (IPM) is required. This plan will outline practices that reduce risks in the handling of pesticides and minimize adverse effects on humans and the environment; promote IPM to reduce the use of toxic pesticides; promote training and capacity building; introduce biological and botanical pesticides; and promote the development of alternatives like biological control methods and techniques, non-chemical pesticides, and pesticides of low risk to humans and the environment; and strengthen monitoring. Implementation of the IPM will be undertaken by the project.

28. On a positive note, the NLSIP will promote the adoption of climate-smart livestock practices and climate-smart livestock processing technologies in the selected value chains by adopting various plans/activities outlined in the National Action Plan for Adaptation, National Adaptation Plan, and Local Action Plan for Adaptation developed by the MoPE including recently made commitments in INDC for reducing climate change hazards and building resilience.

29. From the social safeguard perspective, the project is expected to generate considerable positive social impacts benefiting largely the project target groups which include smallholder dairy and goat farmers as well as private sector small and medium agro-entrepreneurs. The benefits will occur through increased opportunities of employment and income among the participating rural and urban households in the NLSIP locations.

30. Although the project does not envisage large-scale construction works, consultations with the implementing agency suggest that there will be some small-scale civil works such as the construction and renovation of office buildings, community infrastructure such as chilling centers, milk and meat processing facilities, training hall, livestock market, slaughter houses, which will be carried out at the SP level on public lands. Hence, the World Bank policy on Involuntary Resettlement policy (OP/BP 4.12) is triggered. To avoid any potential adverse impacts, a Resettlement Policy Framework has been developed as part of the ESMF to guide the implementing agency to undertake required social planning namely screening, social assessment, and preparation of the RAPs.

31. The population structure of Nepal is complex with many caste and ethnic minorities including poor and vulnerable groups living together, particularly in many rural communities. The high population percentage of indigenous people accounting for about 37 percent at the national level and several scattered settlements with mixed population across many NLSIP Municipalities suggests that the project triggers the World Bank's policy on Indigenous Peoples (OP/BP 4.10). Taking this into account, a VCDPF has been developed as part of the ESMF that fully guides the planning and implementation of mitigation

measures to avoid and mitigate any potential adverse impacts that the project might cause to the indigenous peoples during the course of project implementation.

32. The project is designed to engage the wider public as its beneficiaries in several ways- through existing producer groups and organizations, expansion of current groups, and alternatively formation of new groups, organizations, and cooperatives where needed. The objective behind this is to enable larger proportions of beneficiaries to participate in project activities (citizen engagement) and access the benefits of the project's services and inputs. Most of the activities to be carried out under Component B of the project are expected to improve producers' access to improved technologies and market information, financial services, and rural infrastructure. The project plans to adopt a decentralized approach to enhance the delivery of market-demand-driven services to the beneficiaries.

33. **Gender considerations.** Given that bulk of the agricultural operations is being carried out by women and their engagement is increasing with the migration of males in search of employment opportunities outside of their communities, the proposed project will ensure greater engagement of women in decision making in all planning and implementation of project activities. Effort will be made to introduce agricultural tools and equipment that are women friendly (feminization of agriculture) besides deliberately focusing on women cooperatives, groups, and entrepreneurs to benefit from project interventions. At least 90,000 women will benefit from the project out of the planned 200,000 beneficiaries. The MIS will help track the progress on gender by producing gender-segregated data to inform the project. Native female social mobilizers will further help the project in reaching the women at the grassroots level.

34. **The project adopts twin strategies to increase its access to the targeted beneficiary groups down to the operational level.** First, to ensure effective capacity building at the grassroots level and support stakeholder dialogue platforms within the targeted value chains and reach the beneficiaries and second, to involve the non-state actors for service provision that are found effective and efficient than public sector service provision alone. For this to be effective, the project will also rely on non-state service providers while simultaneously reinforcing public capacity to provide for key mandated services. The project design involves the following key arrangements to make citizen engagement effective.

i. **Feedback mechanism.** Various feedback systems are designed and put in place to track the project performance and keep on improving the same during implementation. Monitoring activities are planned under the project ensuring that baseline and follow-up surveys and data collection for the KPIs are available and regularly updated. The M&E reports will be produced on a four-monthly basis. An LMIS will help in the collection and dissemination of livestock information from the project through the ICT platform. A midterm study no later than three years of project implementation and a final evaluation at the end of the project will be carried out.

ii. **Grievance redressing.** As part of citizen engagement and to ensure greater transparency and accountability, effective GRM will be put in place to handle the grievances at the operational level where the public will be able to raise their concerns and voices to access project information and benefits. The mechanism will allow the citizens to file their grievances and seek the services to get their grievances recorded, heard and redressed on time, eventually leading to better citizen engagement. The grievance redress committee (GRC) will be formed at the PMU and the regional levels to address grievances. A complaint cell will be established in each regional office to collect complaints and transmit them to

the respective GRCs. The affected persons/communities may register their grievances through multiple ways including filing in locked boxes at the project office that can only be opened by a designated person, email, a designated telephone number, and submission of complains at the regional offices. The GRC will meet on a bimonthly basis to respond to the petitions submitted by the people/community. The decision on grievances shall be made within five weeks at the regional offices. If the grievances could not be resolved at the regional level, it will be forwarded to the PMU with reasons, and in such cases, the PMU should resolve the grievances within one month from the date of entry.

iii. **Participatory and socially inclusive.** A participatory approach inclusive of both men and women involving beneficiaries of all social groups will be adopted during the planning and implementation of the project. A wide range of project-affected people—community members, members of vulnerable groups, project implementers, civil society, and the media—will be encouraged to bring grievances and concerns to the attention of the project authorities. Special attention will be given to ensure that poor people and marginalized groups, including those with special needs, are able to access the project benefits.

iv. **Public consultation and disclosure in accordance with the World Bank safeguard policies.** Public consultations were conducted, with local and commercial farmers, DADO, DLO officials, and other stakeholders from October 2016 to December 2016 in three regions of the country. Their opinions and concerns have been taken into account while formulating the ESMF, which has been disclosed at the local governmental website on February 28, 2017, and the World Bank's InfoShop on March 1, 2017.

Monitoring and Evaluation

35. The Results Framework in annex 1 defines the performance indicators for each component and subcomponent. A robust M&E system will be implemented to provide high-quality information and allow the World Bank to react immediately in the event of any issues that arise. The PMU will be in charge of the overall M&E and for meeting the agreed reporting requirements. The M&E system will be designed to link technical and financial data on project progress and impact. It will serve as a tool to assess project results and as a day-to-day management tool, and will support project supervision by ensuring that baseline and follow-up surveys and data collection for the KPIs are available and regularly updated. M&E reports will be produced on a four-monthly basis. Semiannual and annual reports will be circulated to sectoral ministries and to concerned development partners. Before project-supported activities get under way, baseline data needed for impact evaluation purposes will be collected in project and non-project areas by a third party specialized in data collection and processing. A midterm evaluation will be conducted halfway through the project life cycle to assess progress made across the various components, and an impact evaluation will be conducted no later than six months before project completion. The evaluation will focus on progress made in terms of supporting the updating of the LMP, implementation of vaccination campaigns, strengthening of cattle and goat breeding centers, strengthening of the DLS, and LSCs' access to finance for key activities articulated in the three components. The project will ensure that gender considerations are fully integrated in impact evaluation studies and will measure the women's empowerment in agriculture index at midterm and at the end of the project implementation period.

36. An MIS will be put in place, hosted and maintained by the PMU. The PMU's M&E specialist will be responsible for providing training to the decentralized-level coordinators of the DLSUs and M&E staff of other relevant Government units to ensure that required information is made available and prescribed in a uniform reporting process.

37. Semiannual joint supervision missions with representatives from the World Bank and the GoN will assess the status of key project outcomes and ensure compliance with legal covenants. A midterm review will be conducted no later than three years after the first disbursement. A final independent evaluation will be conducted in the last semester of project implementation to assess the overall achievement of expected project results.

38. The M&E annex in the PIM provides details with regard to the definition of the Results Framework, the methodology and the instruments to be used for data collection, the institutional arrangements for M&E functions (identification of actors and definition of their respective responsibilities), the GRM, and the mechanism to be used for disseminating information. It will inform a communications strategy that will be developed and implemented by the PMU.

ANNEX 4: IMPLEMENTATION SUPPORT PLAN

A. Strategy and Approach for Implementation Support

1. The World Bank will extend its support to the MoLD in implementing the Livestock Sector Innovation Project and facilitate in achieving the PDO of the project. The support will include technical advice, M&E, safeguards and fiduciary aspects of the project including capacity building in these areas as and when needed.

2. To ensure the readiness for implementation, the PPA was released as an advance to finance activities including (i) recruitment of consultants to prepare the manuals, ESMF, and guidelines and overall project preparation activities; (ii) key studies including value chain development and feasibility and livestock insurance policy analysis; and (iii) hiring of office space, vehicles, and goods.

B. Implementation Support Plan

3. **PIM.** The PIM will form the basis for guiding project implementation, which will detail the roles and responsibilities of all implementing agencies/partners and the management structure, processes and procedures for the implementation of the project. The PIM, which includes all other relevant documents, such as the Procurement Plan, budget and disbursement projections, administration procedure, monitoring and impact evaluation, cost tables, and safeguard documents (ESMF), will be made available both in the English and Nepali languages.

4. **Technical support (TA).** Key TA and advice from the World Bank will focus on supervision and monitoring of the key activities under the project as guided by the indicators in the results matrix and the project document. Experts on key technical matters relevant to the project will be part of the World Bank team to facilitate and guide the project implementation unit. This could include, but not be limited to, organizations such as the FAO and the International Livestock Research Institute, which will be recruited on a competitive basis. In addition to being seconded from the Government, the PMU and cluster-level project support units will have project-hired external (local) consultants to support and ensure quality implementation. They will include, but not be limited to, financial, procurement, value chain/business development, M&E specialist, sociologist, and environmental specialist.

5. **Procurement.** The World Bank procurement team will guide the project implementation to ensure the procurements follow the World Bank guidelines. This will be carried out through a combination of activities such as regular procurement trainings, prior and post reviews of contracts, review and monitoring of the progress on the Procurement Plan, guidance, follow-up, and review of other procurement-relevant documents and issues.

6. **FM.** The FM expert working with the project will support the implementation by monitoring and supervising FM activities and systems, reviewing and providing regular follow-ups on IUFRs and internal and external audit reports, providing support in conducting various trainings to the central and field staffs working on FM, and assessing the adequacy of FM arrangements including fund flows and accounting. Training of staff on FM procedures will take place in the first six months of project implementation.

7. **Safeguards.** The World Bank safeguards team will guide and work closely with the project to develop the required planning tools as specified by the ESMF. The framework, which is already prepared and disclosed, will serve as a guideline to identify, assess, and mitigate the adverse environmental and

social impacts at the SP level. The World Bank safeguards team will join the implementation and supervision missions twice a year, regularly follow up on the agreed actions and safeguards issues as and when needed in addition to facilitating, planning, and implementing ESMF trainings to the project team on safeguards compliances throughout the implementation.

8. **M&E.** Capacity building of the implementing agencies in M&E is a key aspect of supervision and implementation support. The MoLD and DLS will be supported with developing monitoring and reporting formats/system for all the components and activities to be undertaken by the project and analysis of data collected and presentation and use of findings. The PMU will be aided by an independent monitoring and verification mechanism undertaken by project-hired external consultants.

Table 4.1. Main Focus of Implementation

Time	Focus	Skills Needed
First 12 months	• Project start-up • Support to implementation activities (sensitization, capacity building, and strengthening implementation capacity including M&E) • Guidance on application of safeguards • Finalization of the PIM • Training on procurement, FM, and safeguards at all levels • Finalization of studies on dairy value chain, livestock insurance, and *Chyangra* wool production • Identification of partner financing institutions	• TTL and Co-TTL • Value chain • Livestock • Pasture and grazing • Micro-finance • Procurement • Communication • Environment • Sociology • M&E • Market access • FM
12–48 months	• Monitoring implementation performance including progress • Review of annual work plans and disbursement schedule • Select and award MGs for viable business proposals in support of value chain development • Closely monitor implementation of grants for selected SPs • Review quality of quarterly/annual reports, data, and various studies produced • Carry out midterm review	• TTL and Co-TTL • Value chain • Livestock • Pasture and grazing • Micro-finance • Procurement • Communication • Environment • Sociology • M&E • Market access • FM

Time	Focus	Skills Needed
12–60 months	• Closely monitor implementation of grants for selected SPs • Carry out timely implementation support missions • Implementation completion report prepared	• TTL and Co-TTL • Value chain • Livestock • Pasture and grazing • Micro-finance • Procurement • Communication • Environment • Sociology • M&E • Market access • FM

Note: TTL = Task Team Leader.

Table 4.2. Skills Mix Required for the Proposed NLSIP (Annual)

Skills Required	Number of Staff Weeks	Number of Trips	Remarks
TTL	20	-	Country Office based
Co-TTL	10	4	Myanmar based
Senior FM Specialist	6		Country Office based
Senior Livestock Specialist	4	2	Washington DC based
Veterinarian	8	4	Rome/India based
Agriculture Specialist	15		Country Office based
Value Chain Specialist	8		Country Office based
M&E Specialist	6		Country Office based
Procurement Specialist	6		Country Office based
Social Safeguard Specialist	5		Country Office based
Environmentalist	5		Country Office based
FM Specialist	6		Country Office based
Micro-finance Specialist	6		Nepal based

ANNEX 5: GREENHOUSE GAS ACCOUNTING

Background and Methodology

1. In its 2012 Environment Strategy, the World Bank has adopted a corporate mandate to conduct GHG emissions accounting for investment lending. The quantification of GHG emission is an important step in managing and ultimately reducing GHG emission and is becoming a common practice for many international financial institutions.

2. To estimate the impact of agricultural investment lending on GHG emission and carbon sequestration, the World Bank has adopted the EX-ACT, which was developed by the FAO in 2010. The EX-ACT allows the basic assessment of a project's net carbon-balance, defined as the net balance of CO_2 equivalent GHG that were emitted or sequestered as a result of project implementation compared to a WOP scenario. EX-ACT estimates the carbon stock changes (emissions or sinks), expressed in equivalent tons of CO_2 per hectare per year.

Data and Assumptions

3. **Project boundaries.** The simplified GHG accounting considers various interventions planned under the livestock sector innovation project, targeting the entire supply chains of three commodities in selected areas: milk (cattle and buffalo), goat meat, and *Chyangra* wool. The simplified accounting includes emissions related to (i) grassland management, (ii) plantation of fodder crop, (iii) enteric methane emissions, and (iv) manure management.

4. **Data source.** The MoLD provided data for the GHG accounting analysis for the project. Data on veterinary chemicals, animal health products, fuel consumption, energy, and construction were extrapolated using standard values used within the departments and data obtained from stakeholders during the missions.

5. **Basic assumptions**. Nepal has warm temperate climate with somewhat of moisture regime. The dominant soil type is High Activity Clay soils. The project implementation phase is 6 years and the capitalization phase is assumed to be 14 years. The 20-year implementation period is standard in the use of EX-ACT. The WOP scenario is assumed not to differ from the 'initial scenario'. This default assumption is deemed reasonable as changes in livestock activities crucially depend on the technology available, which is a contribution of the project. The analysis further assumes the dynamics of change to be linear over the duration of the project.

6. Nepal's GHG emission is around 36.7 mega ton CO_2 equivalent, which is only about 0.027 percent of global total (2010). Of this emission, 53 percent is from the agricultural sector. Major sources of emission from the agriculture sector include enteric fermentation and manure management, methane from flooded rice fields, and CO_2 emitting from crop lands. Total emission from livestock sector contributes about 76.7 percent (enteric fermentation 54.1 percent, manure left on pasture 13.3 percent) of the agriculture emission while croplands contribute only about 23.3 percent (for example, rice field 14.8 percent, burning residue 3.4 percent, and synthetic fertilizers 2.6 percent).

7. In general, livestock activities contribute to emissions in three broad ways:

- Ruminant livestock species, especially cattle, buffalo, and goats, produce methane (CH_4) as part of their digestion. This process is called enteric fermentation.

- Manure management also contributes to CH_4 and nitrous oxide (N_2O) emissions. Manure storage and application methods and the amount of exposure to oxygen and moisture affect how these GHGs are produced.
- The management of rangeland directly affects their primary productivity and the net fluxes of carbon between the atmosphere and the different pools of carbon in biomass and soil organic matter. Grassland degradation leads to a net loss of carbon into the atmosphere, whereas grassland restoration leads to carbon sequestration.
- Interventions considered in this estimate are expected to lead to reduced GHG emissions under the project.
- The project will improve the management (including use of inputs) of 5,000 ha that are currently 'moderately degraded' and will become 'severely degraded' without the project.
- The project will support the plantation of at least 500 ha of fodder trees on degraded land.
- The project will support the installation of 7,000 ha of improved fodder crops on land currently used for average pasture and grain crop.
- The project will reduce the increase in the number of dairy cattle, other cattle, buffalo, and goat stables (from 350,000, 1.4 million, 1.25 million, and 2.6 million, respectively, to 385,000, 1.54 million, 1.4 million, and 2.9 million, respectively), whereas these populations would grow without the project (up to 400,000, 1.6 million, 1.5 million, and 3.0 million, respectively). This means the project will mostly achieve the growth in output by increasing yields.
- The project will improve feeding practices (30 percent of dairy cattle, 30 percent of buffalos, and 10 percent of goats receiving concentrate by the end of the project, against 3 percent, 5 percent, and 1 percent in baseline, respectively).
- The project will improve genetics (among 30 percent of dairy cattle, 10 percent of buffalos, and 5 percent of goats by the end of the project, against 15 percent, 3 percent, and 1 percent in baseline, respectively).

8. **Climate co-benefits.** Climate co-benefits were assessed for each project component and activity, and it is expected that the project will generate significant adaptation and mitigation co-benefits of at least 28 percent.

Table 5.1. Estimated Number of Livestock in the Proposed Project

Livestock	Head Number (Mean per Year)			
	Start (2017)	Growth Rate per Year (%)	WOP (2020)	With Project
Dairy cattle	350,000	2.3	400,000	385,000
Other cattle	1,400,000	2.3	1,600,000	1,540,000
Buffalo	1,250,000	3.1	1,500,000	1,400,000
Goats (meat)	2,600,000	2.4	3,000,000	2,900,000
Goats (wool)	100,000	1.6	110,000	130,000
Goats (TOTAL)	2,700,000		3,110,000	3,030,000

Table 5.2. Estimated Livestock Production in the Proposed Project

Livestock	Production (Meat, Milk) in Tons of Product per Year				
	Start (2016)	WOP (2022)	With Project (2022)	Increase (with Project/WOP)	Increase (with Project/Start)
Dairy cattle (milk)	147,000	184,800	210,210	13.8	43.0
Buffalo milk	504,000	604,800	720,720	19.2	43.0
Goat meat	36,504	46,332	50,895	9.8	39.4
Chyangra wool (raw)	10	12	18	57.6	82.0

Results

9. The WOP (business as usual) scenario leads to net GHG emissions (including both emissions and carbon sequestration) that add up to 102.5 million tons of CO_2 equivalent. The hypothetical project scenario considerably improves the GHG footprint, leading only to a total net emission of 96.9 million tons of CO_2 equivalent.

10. Compared to baseline trends (WOP scenario), the planned project intervention is estimated to result in a net GHG emission reduction of 5.6 million tons of CO2 equivalent while at the same time increasing production levels by 10–60 percent, depending on commodities.

11. The sink results primarily from improved livestock management practices, and related mitigation of enteric CH_4 emissions (higher efficiencies attained at animal and herd levels):

- CO_2 emissions reduced by 0.9 million tons (mostly sequestration in grassland)
- N_2O emissions reduced by 1.9 thousand tons (mostly manure management)
- CH_4 emissions reduced by 165 thousand tons (mostly enteric emissions)

ANNEX 6: ECONOMIC AND FINANCIAL ANALYSIS

Overview

1. In Nepal, the livestock subsector contributes 31 percent to the agricultural GDP. More than 60 percent of the economically active population is engaged in crop-livestock forest integrated farming systems. A significant proportion of small farmers and the landless households keep a sizable proportion of livestock. Livestock plays a vital role in food security for the poor: it is the only source of high value protein in the diet and provides 20 percent of the total household income in the hills.

2. The project aims to increase productivity, enhance value addition, and improve climate resilience of smallholder farms and agro-enterprises in the dairy, goat, and *Chyangra* goat value chains with 4 components, and 10 subcomponents.

3. The innovative approaches proposed in the project anticipate to address the key problems suffered by existing farming system such as low animal productivity, inadequate access to effective extension services, lack of affordable credit, and limited market opportunities. The project will drive impact from separate but closely linked sources such as a technical response to improved extension and animal health services and a financial response from access to finance and affordable investment credit. Market distortions will also be addressed through a progressive reduction of government controls and promotion of community and private sector-led interventions such as improved service delivery, better hygiene standards and quality control, at the level of both input supplies and availability of processed products.

4. The project will target 200,000 beneficiary (at least 35 percent women) smallholder farm families.[20] In addition, the wider rural economy will benefit through enhanced food production and additional employment opportunities. Investment in livestock processing and marketing enterprises will provide employment and expanded trading opportunities to additional about 200 households, comprising investors, technicians, direct and indirect labors, and different actors in the value chain. Cash incomes of the beneficiary households will increase and food insecurity will be notably reduced. Farmers will benefit from access to improved livestock extension services which will result in improved and sustainable production through increase in livestock head and productivity of the animal. Project impacts will be the outcome of a combination of social mobilization, group operation, capacity development, improved feeding, improved animal health, extension services, and access to finance.

Demand Analysis

5. The output of the project will be the incremental production of milk, meat, and wool. The project intervention will improve the links between production and trade by promoting local processing, and marketing of these products. Milk will generally be sold in the local area and/or through organized channels such as producers' groups and milk cooperatives. Live animals are likely to be consumed locally, and/or sold to livestock traders in nearby market.

6. The formal collection system initiated by the DDC, and private dairy processing factories has been effective in collecting milk from a wide area for sale in Kathmandu and other major urban areas

[20] The beneficiaries' composition will be 90,000 producing improved cattle and buffaloes, 109,000 goat raising, and 1,000 *Chyangra* farming.

such as Bharatpur, Pokhara, Butwal, Bhairahawa, Biratnagar, and other emerging market town areas. The milk collected and processed by the DDC and other formal channels accounts for less than 15 percent of the total milk produced in the country.

7. Experiences of Asian Development Bank (ADB) implemented Community Livestock Development Project, and the Third Livestock Development Project reveal that secondary towns are a ready market for milk and milk products. These projects have demonstrated that small dairies with low-cost technology are financially viable and potentially create employment opportunities. The annual milk demand has been growing over time and over the last one decade in the urban and emerging market towns areas, and annual growth is expected to exceed 10-11 percent in the recent year. The project will supplement the increased milk demand by promoting milk collection through farmer's groups/cooperatives, promoting small scale processing, and marketing in emerging marketing towns and urban centers. The project will emphasize on diversifying the traditional dairy product in rural and peri-urban areas and undertake dairy product marketing through the DDC and private dairy factories in larger urban areas and emerging market town areas.

8. Meat consumption is increasing because of change in taste and preferences of the people due to urbanization and rising incomes. However, the gaps between demand and supply of meat and meat products have been widening. National demand for meat is estimated at 650,000 metric tons and that of domestic production/supply is estimated to be below 303,401 tons in 2015. The domestic production of meat is 50 percent lower than the total national demand. The increasing gap is currently being filled by importing live animals from Tibet and India; as well as meat and meat products from Tibet, India and overseas. On average, 200,000 heads of buffalo, 400,000 goats, and 60,000 heads of pigs are imported annually from India (MoAD 2015). The production of goats will be readily absorbed in the domestic market in Nepal. Small and marginal farmers in rural and peri-urban areas potentially substitute the demand for meat product in domestic markets. Incremental project production is primarily to be consumed within the household, or sold locally. There is notable import of live animals from rural areas, India, and Tibet to meet the increasing demand for meat products in urban centers. The import of live animals is quite significant in the month of September and October each, which coincides with the festival seasons.

Sector Policy Context

9. Currently, the increasing urban demand for milk and milk products is met by imports of milk powder and other milk products. In 2014/15, 14,412 metric tons of dairy products amounting NPR 20,962 million were imported. Local production capacity is not presently able to meet the rising demand for milk. Poor quality subsidized skim milk powder, and milk (55,000 liters per day) are imported from India to meet the local production deficit of 60 percent. The demand for processed milk is estimated at 0.6 million liters per day against local production of 0.25 million liters. The project aims to intervene this through a comprehensive policy review, modification, updating, or developing of new policies such as LMP, animal health policy, infectious diseases act, and breeding policy. The project will support activities such as improving capacities and infrastructures related to efficient implementation of the acts and policies that are already promulgated or at the final stage of approval. The project will work to deregulate milk pricing, which is influenced by the DDC's market operations. Related reforms include enforcing legislation pertaining to meat and animal feed quality, and removing tax and duty distortions in the livestock industry. Reorientation of the DLS on new and effective extension policies is also envisaged to strengthen its capability in community development and extension, M&E, and market

surveillance. Additionally, private sector institutions will be supported to take responsibility for quality assurance.

Approach and Methodology

10. Direct benefits have been expected from the project intervention on dairy, meat and *Chyangra* wool sector. In doing the cost-benefit analysis of the project intervention, where appropriate, quantifiable effects of the project are valued by comparing with-project and WOP scenarios. All the 200,000 farmers benefiting from the project will be existing livestock growers. They will be growing cattle, buffalo, goat, or *Chyangra* goat. Under the farming system of the rural areas, there will be some farmers raising few heads of cattle, buffalo, and goat together, and it will not be technically feasible to separate the single activity from the household economics of the project beneficiaries. They will realize incremental benefit through upgrading and improved management of existing livestock farming practices, better extension services, participating in breed improvement program, and participating in disease/pest control initiatives. In addition to quantifiable benefits and costs included in the analysis, the project can have non-quantifiable effects. Community mobilization, for example, can result in women acquiring skills and confidence to participate more actively in village affairs on growth and development of livestock sector including feed and forage management, vaccination camp, livestock management services, and so on. The increase in farm household incomes and enhanced food security will also result in improved nutrition and health status among target beneficiaries. The economic and financial analysis of the project has been in cognizance of the context and realities described above.

11. Information on prices and production and other relevant data used in the analysis were obtained from a variety of secondary sources, interview with the MoLD and DLS officials and review of trade statistics on live animals, meat, and milk products. While market price was used for financial analysis, shadow price, shadow wage rate, and conversion factors were used to convert the financial analysis figures into the economic analysis.

12. Assumptions used in the financial analysis are as follows:

- For the farm-level analysis, two cattle and/or buffalo and two goat farm model were analyzed, and production change due to the introduction of better management practices on existing *Chyangra* heard was estimated.
- Life of the project is assumed to be 20 years including the project implementation period.
- Percentage increase of average milk production per cow/buffalo per lactation is assumed to be as targeted at 0 percent, 5 percent, 15 percent, 25 percent, 40 percent, and 40 percent, respectively, in the first, second, third, fourth, fifth, and sixth year of the project and constant thereafter.
- Percentage increase in offtake rate expressed as carcass weight for goats is assumed to be as targeted at 0 percent, 10 percent, 20 percent, 30 percent, 40 percent, and 40 percent, respectively, in the first, second, third, fourth, fifth, and sixth year of the project and constant thereafter.
- Percentage increase in *Chyangra* wool production will be 0 percent, 10 percent, 30 percent, 50 percent, 80 percent, and 80 percent, respectively, in the first, second, third, fourth, fifth, and sixth year of the project and constant thereafter.

- Cost sharing arrangement on value chain enterprise will be 50:30:20 (IDA grant : bank loan : owners' contribution).
- There are different value chain activities proposed in this project. Of these activities, management institution, cattle shed improvement, live animal/livestock handling facilities, *Chyangra* shed improvement, and so on will contribute on increased milk, meat, and wool production to the targeted level. Thus, they will have an indirect effect.
- As in other project appraisal documents, a 10 percent discount rate was used to bring the future value of the enterprise into the present value.

13. In doing the economic analysis, financial values were converted into the economic values using following assumptions.

- Import parity price is used for the milk products.
- Border price is used for the goat meat.
- Values are expressed in constant 2016 prices to exclude inflation.
- An exchange rate of NPR 108 per US$1 is used.
- For non-traded goods and services, specific conversion factors were estimated and shadow wage rate of 0.53 for unskilled labor is used. Reference has been made to the latest appraisal report in use.
- For major tradable commodities, economic values were based on border parity pricing.
- Transfer payments such as taxes and subsidies were excluded in calculating economic values.
- GHG outcome has been integrated using the estimates produced by the project. There will be positive externalities (net) resulting from improved practices estimated to be 5.6 million tons CO_2 equivalent over the 20 year analysis period. At US$30 per ton, this will be a fairly large benefit of about US$160 million. This will be the net economic benefit of the project and has been integrated in the economic analysis.

Indirect Benefit and Cost

14. The project will have direct impact on reducing the incidence of poverty of the project beneficiaries. The project will increase household incomes and provide better family nutrition. Promotion of stall-feeding of animals under the project will result in improved crop production because of increased availability of manure and environmental benefits resulting from increased forage production. Increments on household income is expected due to more efficient labor use. Given the degree of unemployment and underemployment that is typical in the project locations, in financial terms this improved return to labor as measured by returns per day will add substantially to household income, particularly to the poor. The project impacts will be generated from separate but closely linked sources such as a technical response to improved technology such as better forage, animal husbandry, and animal health services; and a financial response from access to affordable financial services, and adoption of improved breed of cattle, buffalo, or goat.

15. Additional employment opportunities are assessed for each enterprise. Replacing forage gathering from the forests which will take most of the time of the poor farm household each day, with forage plots next to the home will give significant labor savings for women. On average across all

enterprises, female labor demand for project related activities is estimated to fall by 13 percent, and male labor demand will rise by 19 percent. Given that female labor accounts for around 80 percent of the total livestock enterprise labor inputs, likely savings through these interventions are significant (ADB, 2014).[21] Women will be able to use the time saved from gathering forage to invest in new cash-earning activities such as calf rearing and commercial forage production. While incremental daily returns from some enterprises are not great, nonetheless they provide an opportunity to earn incremental income, instead of existing situation of high labor demand on women to support enterprises generating low income.[22]

16. The project will train the dairy entrepreneurs to market milk and other daily products. Incremental production of 35,502 tons of milk per year (97.2 tons per day) will be sold in local markets and/or assembled by local dairy cooperatives and sold to the DDC and other private dairy processing plants. Deficit in milk production is large, improvement in marketing system is expected, and incremental milk production is considered feasible through organized efforts through farmers' groups, cooperatives, the DDC, private dairy industries, and other informal sectors. The expected annual incremental goat output of 218,000 heads represents about 57 percent of the official goat imports from India. The expected annual incremental dairy products including butter (ghee) will be consumed within the project locations, which have a population of over 1.8 million households. Given the low but rising per capita consumption of livestock products in Nepal, this population will readily absorb the project outputs. This will eventually be the substitution of the imports of live animal, meat and milk products, and wool in the country.

17. The cash flow analysis of value chain enterprise (dairy, meat, and pashmina) shows that the costs associated with the development of these enterprises (debt servicing) are affordable. In addition to servicing the debt, farmers can then accumulate sufficient capital to ensure that they generate adequate working capital within the project period. Given the conservative production assumptions of the enterprise models, financial sustainability has been achieved. Further, such an incremental income will financially empower beneficiary farm families and entrepreneurs considerably.

18. To determine the viability of the enterprises competing with imports and in view of current market distortions, an illustrative analysis and examination revealed that promoting investments in livestock enterprises is financially viable, domestic resource cost of production is lower and there is comparative advantage on promoting these ventures. Results of the financial and economic cost-benefit analysis of all the value chain enterprises revealed that these enterprises demonstrated competitiveness under existing market conditions. In both the financial and economic analysis, IRR, BCR, and NPV were positive, indicating that the enterprise creates additional value and is economically viable.

Financial and Economic Analysis

19. On the basis of the above assumption and financial/economic consideration, the financial analysis was done based on the incremental cash flow at the farm level production of (i) milk, (ii) meat, (iii) *Chyangra* wool, and (iv) value chain enterprises. Results of the financial analysis provided in

[21] Project Completion Report, Community Livestock Development Project, ADB, 2014

[22] Returns to daily labor will also increase; on average, the incremental return to labor from the representative enterprises will increase to US$2.25 from the current US$0.79 per day. With a high proportion of labor being female labor, this represents a 190 percent increase on the current daily labor rate for women (US$0.77).

following table indicate that the investment in the project is financially attractive. The NPV at 10percent discount rate is positive and is US$156.27, FIRR is 23.7 percent, and BCR is 1.42.

20. Sensitivity analyses were performed by assuming various scenarios of decreased production of milk and meat by 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent, and increased operating cost of value chain enterprises by 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent. The result of the sensitivity analysis is provided in the following tables.

Scenario 1: Reduction in Milk Production

		Milk Production Reduced by				
		10%	20%	30%	40%	50%
NPV @ 10% discount factor	US$	142.72	129.17	115.62	102.07	88.22
IRR	%	22.7	21.6	20.5	19.3	18.2
BCR @ 10% discount factor	Ratio	1.39	1.35	1.31	1.28	1.24

21. The project is not very sensitive on the reduction on milk production by 10 percent to 50 percent.

Scenario 2: Reduction in Meat Production

		Meat Production Reduced by				
		10%	20%	30%	40%	50%
NPV @ 10% discount factor	US$	141.6	126.93	112.26	97.58	82.91
IRR	%	22.6	21.4	20.2	18.9	17.7
BCR @ 10% discount factor	Ratio	1.38	1.34	1.30	1.26	1.22

22. The project is moderately sensitive to the reduction on meat production by 10 percent to 50 percent. Nevertheless, the project is financially attractive under different rates of reduction on meat production.

Scenario 3: Increase in Operating Cost of the Selected Value Chain Enterprise

		Operating Revenue of Value Chain Enterprise Reduced by				
		10%	20%	30%	40%	50%
NPV @ 10% discount factor	US$	132.07	107.87	83.66	59.46	35.26
IRR	%	21.7	19.7	17.6	15.5	13.3
BCR @ 10% discount factor	Ratio	1.36	1.29	1.23	1.16	1.10

23. The project is not very sensitive to the reduction in gross revenue of the selected value chain activities at 10 percent to 50 percent.

24. Thus, the sensitivity analysis results indicate that the project remains viable with a 10 percent, 30 percent, 40 percent, and 50 percent decrease on milk and meat production, and also 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent increase in annual operating cost of the value chain

enterprise. This indicates that the project has the capacity to withstand shocks of operating cost overruns and reduction in milk and meat production and resultant income. However, before starting on any investments in any of the value chain enterprises, detailed feasibility studies/business plan preparation exercises need to be conducted to ensure that the investments are financially viable.

Conclusion

25. An important assumption underlying the project design is that livestock enterprises undertaken by poor farmers are sustainable and have potential to generate income and employment. A key strategy in ensuring sustainability is to improve market access and add value through the processing of the livestock products. The design of the project has included support to value chain development through improved livestock processing and marketing as one of the component of the project to ensure sustainable support for livestock development.

26. Poorly informed about prices and weights are the two most important market constraints faced by farmers in live animal trade, and one of the first priority demand of the farm households in the project areas. The project will respond to the demand of live animal market by developing live animal/livestock handling facilities with weighing facilities at some strategic locations. This will improve buyers' access to livestock products and provide a forum for interaction of both buyers and sellers on an equally informed basis. Livestock weighing before sale will empower producers and buyers equally. Other investments such as milk chilling centers, slaughter house (large and small), cold storage, milk processing plants, *Chyangra* pashmina yard preprocessing plant establishment, and *Chyangra* pashmina yarn plant, are expected to address other market failures by providing a market for farmer's incremental production, increasing employment opportunities, and supplying quality oriented livestock services not currently being provided by government and nongovernment service providers.

27. Investment promotion for livestock value chain development through MG from the project, loan from BFIs, and beneficiaries' contribution is instrumental for creating 4,000 person years of annual employment. In addition to creating jobs directly through enterprise promotion and development, considerable downstream employment will be generated from input suppliers and construction contractors, as well as, upstream employment through marketing, distribution, and trade-related activities. It is estimated that in dairy subsector, every milk producing farmer (2 heads) creates 5–6 jobs, if properly linked to value addition and value chain development.

ANNEX 7: MAP WITH PROPOSED PROJECT LOCATIONS