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IDA/R2019-0137/1

May 10, 2019

Closing Date: Thursday, May 30, 2019
at 6:00 p.m.

FROM: Vice President and Corporate Secretary

Lesotho - Smallholder Agriculture Development Project - II

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Lesotho for a Smallholder Agriculture Development Project - II (IDA/R2019-0137/1), 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

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Report No: PAD3310

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED CREDIT

IN THE AMOUNT OF SDR 36.10 MILLION
(US$50.0 MILLION EQUIVALENT)

TO THE

KINGDOM OF LESOTHO

FOR A

SMALLHOLDER AGRICULTURE DEVELOPMENT PROJECT – II

May 8, 2019

Agriculture Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2019)

Currency Unit =	Lesotho Maloti
LS1 =	US$0.0700
US$1 =	SDR 0.72033135

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Hafez M. H. Ghanem
Country Director:	Paul Noumba Um
Senior Global Practice Director:	Juergen Voegele
Practice Manager:	Mark E. Cackler
Task Team Leader(s):	Meeta Sehgal, Bobojon Yatimov

ABBREVIATIONS AND ACRONYMS

APPSA	Agricultural Productivity Program for Southern Africa
AWPB	Annual Work Plans and Budgets
CA	Conservation Agriculture
CERC	Contingent Emergency Response Component
CGC	Competitive Grants Committee
CoW	Commission of Water
CPF	Country Partnership Framework
CSA	Climate Smart Agriculture
CSIP	Climate Smart Investment Plan
CSO	Civil Society Organization
DAO	District Agricultural Officers
DAR	Department of Agricultural Research
DFS	Department of Field Services
ESMF	Environmental and Social Management Framework
FAO	Food and Agricultural Organization
FFS	Farmer Field School
FM	Financial Management
FMNR	Farmer Managed Natural Regeneration
FNCO	Food and Nutrition Coordination Office
GBV	Gender-based violence
GoL	Government of Lesotho
GDP	Gross Domestic Product
GHG	Green House Gas
Ha	Hectare
ICM	Integrated Catchment Management
ICR	Implementation Completion and Results Report
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IPCC	Inter-Governmental Panel on Climate Change
ISFM	Integrated Soil Fertility Management
IWCO	Irrigation Water Community Organization
JICA	Japan International Cooperation Agency
LASAP	Lesotho Adaptation for Small Holder Agriculture Project (IFAD)
LLWDP	Lesotho Lowlands Water Development Project
LSL	Lesotho Loti
MoDP	Ministry of Development Planning
MoET	Ministry of Environment and Tourism
MoF	Ministry of Finance
MAFS	Ministry of Agriculture and Food Security
MEMWA	Ministry of Energy, Meteorology and Water Affairs
MFD	Maximizing Finance for Development
MFLR	Ministry of Forestry and Land Reclamation

MIS	Management Information System
MLGC	Ministry of Local Governance and Chieftainship
MSBCM	Ministry of Small Business, Cooperatives and Marketing
MSME	Micro, Small and Medium Enterprises
MTI	Ministry of Trade and Industry
MWA	Ministry of Water Affairs
NSDP-II	National Strategic Development Plan II (2018-19/2022-23)
PDO	Project Development Objective
PHRD	Policy and Human Resources Development
PIM	Project Implementation Manual
PMC	Project Management Committee
PMU	Project Management Unit
POS	Point of Sale
PSCED	Private Sector Competitiveness and Economic Diversification Project
RISDP	Regional Indicative Strategic Development Plan (SADC)
RPF	Resettlement Policy Framework
SACU	Southern African Customs Union
SADC	Southern African Development Community
SADP	Smallholder Agriculture Development Project
SCD	Systematic Country Diagnostic
SHEP	Smallholder Horticulture Empowerment Project
TA	Technical Assistance
VC	Value Chain
WAMPP	Wool and Mohair Promotion Project (IFAD)
WFP	World Food Program
WHO	World Health Organization
WUA	Water Users Association

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Lesotho	Smallholder Agriculture Development Project - II	
Project ID	**Financing Instrument**	**Environmental Assessment Category**
P165228	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
30-May-2019	31-May-2026

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The development objective of the project is to support increased adoption of climate smart agricultural technologies in Lesotho's agriculture, enhanced commercialization and improved dietary diversity among targeted beneficiaries.

Components

Component Name	Cost (US$, millions)

Promoting Climate Smart Agricultural Practices and Advisory Services	26.00
Improving Agricultural Commercialization and Nutrition	17.00
Project Management, Coordination and Monitoring and Evaluation	7.00
Contingency Emergency Response Component	0.00

Organizations

Borrower:	Ministry of Finance
Implementing Agency:	Ministry of Agriculture and Food Security (MAFS)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	57.00
Total Financing	57.00
of which IBRD/IDA	50.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	50.00
IDA Credit	50.00

Non-World Bank Group Financing

Counterpart Funding	5.00
Local Beneficiaries	5.00
Trust Funds	2.00
Japan Policy and Human Resources Development Fund	2.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount

National PBA	50.00	0.00	0.00	50.00
Total	**50.00**	**0.00**	**0.00**	**50.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026
Annual	0.00	1.97	4.32	6.43	9.30	10.22	9.75	8.02
Cumulative	0.00	1.97	6.29	12.71	22.02	32.24	41.98	50.00

INSTITUTIONAL DATA

Practice Area (Lead)

Agriculture

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate

5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Moderate
9. Other	Moderate
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36		✓
Pest Management OP 4.09	✓	
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37	✓	
Projects on International Waterways OP/BP 7.50	✓	
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description
Schedule 2. Section I. A. 2. The Recipient, through MAFS, shall hold overall responsibility for the Project. Specifically, the Recipient, through MAFS, shall establish and thereafter maintain, throughout the period of implementation of the Project, one Project implementation unit under terms of reference, functions and resources satisfactory to the Association

Sections and Description
Schedule 2. Section I. C. 1. Without limitation on the provisions of Section C of this Schedule 2, the Recipient shall carry out Parts 2(a) and (b) and 3(c)(i) in accordance with the provisions of the Grant Manual, containing, inter alia, detailed arrangements and procedures for selecting the Smallholder Farmers, Agri-Enterprises and the Beneficiaries, extending the Matching Grants and/or Grants and appraising, monitoring and evaluating activities financed by those Matching Grants and/or Grants.

Sections and Description
Schedule 2. Section I. D. For purposes of extending the Matching Grants and/or Grants under Parts 2(a) and (b) and 3(c)(i) of the Project, as applicable, the Recipient shall: (a) review and appraise all the Matching Grants and Grants' proposals in accordance with the terms and conditions of the Grant Manual; and (b) make a Matching Grant or Grant under a Partnership Agreement with the respective selected Smallholder Farmer, Agri-Enterprise or Beneficiary under terms and conditions acceptable to the Association,

Sections and Description
Schedule 2. Section I. E1. The Recipient shall ensure and cause to ensure that the Project is carried out in accordance with the provisions of the EMSF, the RPF, the IPMP and all Safeguard Assessments and Plans. To this end, the Recipient shall ensure that the appropriate review, clearance and public disclosure of all Safeguard Assessments and Plans as required by the EMSF and the RPF.

Sections and Description
Schedule 2. Section I. E3. Without limitation on its other reporting obligations under this Agreement, the Recipient shall collect, compile and submit to the Association on a bi-annual basis (or such other frequency as may be agreed with the Association) consolidated reports on the status of compliance with the ESMF, the RPF, the IPMP and the Safeguard Assessments and Plans, giving details of: (a) measures taken in furtherance of the said instruments; (b) conditions, if any, which interfere or threaten to interfere with the smooth implementation of the said measures; and (c) remedial measures taken or required to be taken to address such conditions.

Conditions

Type	Description
Effectiveness	Article IV. 4.01. The Grant Agreement has been signed and delivered by all the parties to such agreement, and all conditions precedent to its effectiveness (other than the fulfillment of effectiveness of Financing Agreement) have been fulfilled.
Type	Description
Disbursement	Schedule 2. Section III. B. 1(b). No withdrawal shall be made until the Association is satisfied, and notified the Recipient of its satisfaction, that all of the following conditions have been

	met in respect of the activities to be carried out under Part 1.2(b) of the Project, including evidence satisfactory to the Association showing that: (i) the Recipient has formally notified the other riparians of said activities, including the required technical details which would enable the other riparians to determine whether such activities have potential for causing appreciable harm through water deprivation or pollution; and (ii) (A) the Recipient has formally received non-objection(s) of the other riparian(s) of said activities; (B) the deadlines provided in the Recipient's notification(s) for receiving non-objections of said activities have expired with no response(s) from the other riparian(s); and/or (C) all the outstanding issue(s) raised by other riparian(s) have been duly addressed by the Recipient in a timely and responsive manner.
Type Disbursement	Description Schedule 2. Section III. B. 1(c). No withdrawal shall be made for payments made under Category (3), unless and until the Association is satisfied, and notified the Recipient of its satisfaction, that the Grant Manual has been adopted in a manner satisfactory to the Association.
Type Disbursement	Description Schedule 2. Section III. B. 1(d). No withdrawal shall be made for payments under Category (4), for Emergency Expenditures, under Part 4 of the Project, unless and until the Association is satisfied, and notified the Recipient of its satisfaction, that all of the following conditions have been met in respect of said activities: (i) the Recipient has determined that an Eligible Crisis or Emergency has occurred, has furnished to the Association a request to include said activities in the CERC Part in order to respond to said Eligible Crisis or Emergency, and the Association has agreed with such determination, accepted said request and notified the Recipient thereof; (ii) the Recipient has prepared and disclosed all safeguards instruments required for said activities, and the Recipient has implemented any actions which are required to be taken under said instruments, all in accordance with the provisions of Section I.G of Schedule 2 to this Agreement; (iii) the Recipient's Coordinating Authority has adequate staff and resources, in accordance with the provisions of Section I.G of this Schedule 2 to this Agreement, for the purposes of said activities; and (iv) the Recipient has adopted an CERC Operations Manual in form, substance and manner acceptable to the Association and the provisions of the CERC Operations Manual remain or have been updated in accordance with the provisions of Section I.G of this Schedule 2 so as to be - appropriate for the inclusion and implementation of said activities

	under the CERC Part.

1. STRATEGIC CONTEXT

A. Country Context

1. **The Kingdom of Lesotho is a small, mountainous, landlocked country in Southern Africa with a population of 2.2 million.** It is an open economy, traditionally centered on trade, with textiles, water, and diamonds as its main exports. Lesotho is a member of the Southern African Customs Union (SACU), the Southern African Development Community (SADC), and the Common Monetary Area all of which create strong opportunities for regional trade. As a member of the Common Monetary Area, its currency is pegged to the South African Rand.

2. **Lesotho is one of the poorest countries in the region, with high levels of poverty and inequality.** An estimated 57 percent of the population lives below the national poverty line and 34 percent falls below the extreme poverty line. Income inequality is among the highest in the world. Rural areas, heavily dependent on subsistence and semi-subsistence agriculture, account for 70 percent of the population and 87 percent of all people living below the poverty line (SCD, 2015). A wide (30 percent) poverty gap, high rates of unemployment, wide prevalence of HIV/AIDS, and climate vulnerability further constrain the scope for inclusive growth and improvements in living standards. GDP per capita is estimated at US$1,181 (2017) and when adjusted by Purchasing Power Parity is equivalent to 16 percent of the world's average.

3. **Economic performance declined after 2012 as Lesotho's growth drivers shifted from exports to high public expenditure and consumption.** Real annual GDP growth was at a low 2.5 percent in 2016-2017 down from a 4.5 percent average over the previous five years. The sharp decline in SACU-related revenues over 2016-2017 and increase in public expenditures to 60 percent of GDP, fueled by wage and employment growth in the public sector, have resulted in a widening of the fiscal deficit and a difficult economic outlook for the country. Output is estimated to have contracted by 1.6 percent in 2017 and is projected to remain subdued in the near term.

4. **Recognizing the inherent unsustainability of this economic model, Lesotho has endorsed a new template for development.** The recently completed National Strategic Development Plan (NSDP)-II 2018-19/2022-23 seeks to pursue inclusive, sustainable growth and private sector-led employment creation. The Government of Lesotho (GoL) has identified four productive sectors, viz. agriculture, manufacturing, tourism and creative industries and technology and innovation as potential sectors for job creation and inclusive economic growth under a new growth path led by the private sector.

B. Sectoral and Institutional Context

5. **Agriculture plays a significant role in Lesotho's economy**. Over 70 percent of the country's population lives in rural areas and depends, directly or indirectly, on agriculture for employment and livelihood. The sector has the highest potential to increase food security, reduce rural poverty, and generate both on- and off-farm employment opportunities. Main crops include maize, sorghum and wheat which are planted as monocrops on 85 percent of the country's arable land which comprises 10 percent of Lesotho's total land area. Livestock contributes 75 percent of total agricultural output, including semi-intensive and intensive production of pigs and poultry, as well as extensive (free range) production of goats and sheep on rangelands in the foothills and highland areas (FAOSTAT-2016). Sheep and goats, which dominate the livestock sector, are reared mainly for wool and mohair.

6. **Lesotho's agricultural sector suffers from low levels of productivity and commercialization which has made the country heavily dependent on food imports to meet domestic consumption needs.** Despite 70 percent of the rural population engaged in some form of agricultural activity, the sector contributes less than 10 percent to the national gross domestic product (GDP). Most of the rural population is engaged in subsistence farming: rain-fed, undiversified farming (primarily cereal production) and extensive livestock grazing. Productivity challenges in the sector, include, *inter alia*, limited size of arable land unfavorable farm structures (average land holding of about 1.0 ha per family), outdated farm technologies and farm management practices, limited technical expertise, sub-optimal use of inputs, lack of an adequate irrigation and drainage system, weak rural infrastructure, a rudimentary rural advisory system, and limited access to credit and investment capital. In addition, the country has experienced severe land degradation. The annual cost of land degradation in Lesotho is estimated at US$57 million, equivalent to 3.6 percent of the country's GDP.[1] Massive soil erosion and loss of scarce agricultural land have resulted in extremely low agricultural productivity levels: land productivity averaged about US$70 per hectare per year compared to the Southern African regional average of about US$120 per hectare per year for the period 2008-2013; cereal yields average less than 1,000 kg per hectare, failing to meet the SADC Regional Indicative Strategic Development Plan (RISDP) target of achieving at least 2,000 kg per hectare[2]. Consequently, marketable surplus remains low. A nascent private sector further constrains commercialization. Private sector activity in Lesotho is dominated by micro-enterprises, with a marked absence of the small and medium-sized enterprises that drive economic growth and job creation in most countries.[3]

7. **Climate change poses major challenges to the development of Lesotho's agricultural sector.** The Inter-Governmental Panel on Climate Change (IPCC) categorizes Lesotho as one of the countries highly vulnerable to the impacts of climate change. The country has a temperate climate with sub-alpine characteristics and experiences regular droughts, floods, frosts, snow, hailstorms, and strong winds. The El Niño-Southern Oscillation (ENSO) phenomenon particularly affects climate variation in Lesotho.[4] High intra-seasonal and inter-annual rainfall variability, with frequent droughts, has often resulted in delayed planting or farmers not planting at all, reduced seed germination due to hardened soil and lack of water, crop failures, deterioration of rangelands and pasture, water scarcity for livestock, and increased food prices of staple grains such as maize.[5] Chronic droughts have also negatively impacted the livestock sector, resulting in rangeland degradation and limiting the carrying capacity of pastoral land. The drought during the 2015-16 growing season was the most severe on record putting over 534,000 people at risk of food insecurity. The current rain-fed crop production system with its focus on maize at the expense of diversification to more drought-tolerant crops (sorghum, millet, cowpeas) increases vulnerability to climatic shocks. The crop production system also makes limited use of climate smart agricultural technologies such as new varieties, conservation agriculture, intercropping, integrated pest management and simple water harvesting technologies, all of which compromise productivity. The erratic and severe weather patterns and land degradation reinforce the need to mainstream climate resilience in Lesotho's agricultural sector.

[1] Global Mechanism of the UNCCD, 2018. Country Profile of Lesotho. Investing in Land Degradation Neutrality: Making the Case. An Overview of Indicators and Assessments. Bonn, Germany.

[2] Charles Nhemachena, Greenwell Matchaya and Sibusiso Nhlengethwa. 2016. Agricultural Growth Trends and Outlook in Lesotho.

[3] A survey of registered business enterprises in 2015 shows that of 9,625 registered business enterprises, 75.6 percent were micro-enterprises (1-4 employees) and 37.5 percent had a turnover of less than one million maloti (approximately US$70,000). Only 15 percent of the enterprises surveyed were small to medium (5-50 employees), and only 4.3 percent had a gross revenue of 1-5 million maloti (US$70,000-US$350,000). This pattern is even more evident in agro-processing and agri-business. Five large enterprises dominate the food and beverage sector[3], with few medium- or micro-enterprises.

[4] World Bank, 2016. "Lesotho Water Security and Climate Change Assessment." World Bank, Washington, DC.

[5] CIAT; World Bank; 2018, 201Climate-Smart Agriculture in Lesotho. CSA Country Profiles for Africa Series.

8. **Provision of irrigation is critical for addressing climatic risks in Lesotho's agriculture; however, the subsector is beset with challenges.** Despite the ready availability of water from the mountains, only 2,600 ha of arable land has been developed for irrigation. Poor management and inadequate maintenance have reduced the area under irrigation, with only an estimated 1,200 ha under irrigation in 2014. The modernization of national water resource management policies and institutions has been slow and physical infrastructure has deteriorated due to lack of public funds for maintenance. Many pump stations are no longer operational and existing headworks and reservoirs have silted up. On-farm irrigation systems have also deteriorated due to ill-defined property rights over infrastructure and weak local capacity for management. There are few effective community-based irrigation management systems and poor links between the existing institutions and the local public institutions responsible for water management. This combination of limited budgetary resources and an inadequate policy and institutional framework hamper the ability to maintain the existing infrastructure as well as expand irrigation. Combating the effects of climate change and increasing productivity towards food security and commercialization will require sustained efforts to provide adequate, reliable and timely delivery of irrigation to Lesotho's crop and livestock farmers.

9. **Development of high value cash crops, such as fruits and vegetables as well as dairy and small-scale pig and poultry production offer opportunities for moving from uncompetitive maize monocropping production to a more diversified production base responsive to climatic risks.** Lesotho's higher altitude, potential for early season production and access to cheap labor combine to create favorable conditions for the production and export of vegetables, fruit and seed potatoes. Regional demand for fruit and vegetables is increasing as urban populations grow, incomes rise, and the popularity of healthy diets increases. Higher production and sales of these high value crops would also deepen domestic agricultural markets, generate rural employment and improve nutrition. However, as current commercial vegetable production occurs on farmland ranging between 100ha and 600 ha (depending upon rainfall) and commercial potatoes on area less than 500ha, achieving diversification and commercialization will need a much broader base. Government support, private investment and donor financing will be critical for these efforts and not just for the horticulture subsector but also for small-scale dairy, pig and poultry development.

10. **A more diversified production base, with greater emphasis on horticulture and livestock production also offers a means to increase dietary diversity and reduce child malnutrition.** Lesotho's high rates of child malnutrition are attributed to poverty, low dietary diversity and inadequate consumption of fruits and vegetables. Limited dietary diversity affects all children - only 23 percent of children have minimum dietary diversity and 11 percent have a minimum acceptable diet. Fruit and vegetable availability was estimated at 128 grams per child in 2013, compared with the WHO recommended daily intake of 400 grams. Increased horticulture and livestock production would contribute to improved nutrition by: (a) increasing the availability of fruits and vegetables as well as protein-rich foods; and (b) improving incomes and thereby resources for access to a more diverse diet.

11. **Recognizing the significant role of agriculture in Lesotho's overall economic growth agenda, the Government of Lesotho (GoL) is undertaking critical measures to build a commercial and climate resilient agricultural sector.** The National Strategic Development Plan (NSDP)-II 2018-19/2022-23, which prioritizes the development of the agricultural sector, identifies three broad areas of strategic action: (i) sustainable commercialization and diversification of agriculture, (ii) a well-functioning agri-food system, and (iii) rehabilitation of range lands and wet lands. Priorities for action within these areas include: (i) improved technology and infrastructure (including irrigation and climate smart agriculture); (ii) increased production of high value crops and livestock products; (iii) the development of institutional frameworks for producer and industry organizations; (iv) building the capacity of farmers to benefit from these institutions; and (v) the development of value chains and agricultural markets. The NSDP-II also calls for the need to scale up current nutrition systems towards strengthening human capital and expanding the use of water harvesting for irrigation. Gender and climate change are indicated as critical cross-cutting issues. Several policies and strategies, including Vision 2020, National

Climate Change Policy (2017), Lesotho Food and Nutrition Policy (2016) and Lesotho Zero Hunger Strategic Review (LZHSR) accord high priority to scaling up climate-smart practices and actions to promote agricultural adaptation and increased food security, achieving zero hunger by 2030, access to adequate food and healthy diets all year round, ending malnutrition, doubling of smallholder productivity and incomes, and eliminating food loss and waste**.** The GoL has also initiated reform of the water sector to promote sustainable and productive use of Lesotho's water resources.

12. **The World Bank has provided substantial support to the development of Lesotho's agriculture sector over the past few years.** Through the two ongoing projects, viz. the Smallholder Agricultural Development Project (SADP) (P119432) and the Private Sector Competitiveness and Economic Diversification Project (PSCED)(P144933), the World Bank has provided financial and technical assistance to improve commercialization and competitiveness. The SADP is providing training and competitive grants to smallholder farmers for improving marketable surplus in several value chains, including horticulture (fruit and vegetable production), poultry, piggery and dairy. The project is also supporting the development of an irrigation master plan to assist the government in its efforts to define strategic priorities for improving the irrigation subsector in terms of alignment with agriculture growth potential, improving resource utilization, improved water delivery service, and institutional and financial sustainability. The Master Plan will identify a pipeline of high priority irrigation investments for support from donors, government, private sector and other non-state actors. The PSCED is assisting in building an enabling business environment, leveraging private investment support, providing access to finance to increase productivity and increasing market opportunities in Lesotho's horticulture subsector. The Bank has also supported the preparation of the Lesotho Climate Smart Agricultural Profile (2018) which provides an overview of the agricultural challenges in Lesotho and recommends country-specific climate smart agricultural practices that can help the country adapt to and mitigate climate change.

13. **The proposed Smallholder Agriculture Development Project–II (SADP-II) has been prepared at the request of the Government of Lesotho to contribute to its efforts in developing a climate smart agricultural sector.** The proposed project, an IDA credit in the amount of US$50 million and a Japanese Policy and Human Resources Development (PHRD) grant of US$2.0 million aims to harness the triple wins of Climate smart Agriculture (CSA) in Lesotho's agri-food sector, i.e., improved productivity, increased adaptive capacity to climate risks and reduced greenhouse gas emissions. Through the provision of technical assistance and investment support, the proposed project would introduce and scale up best practices in CSA and sustainable land management thereby mainstreaming climate and environmental considerations into agriculture as well as incentivize a shift from uncompetitive maize monocropping to high potential value chains, all of which are expected to result in positive outcomes of increased commercialization, enhanced climate resilience, food security, job creation, improved rural livelihoods and improved nutrition.

C. Relevance to Higher Level Objectives

14. **The proposed project is aligned with the World Bank twin goals to reduce poverty and promote shared prosperity.** By strengthening farmer knowledge and use of climate smart technologies, improving water resource management and availability of irrigation, and strengthening key value chains in the crop and livestock subsectors, the project will support commercialization and climate resilience in Lesotho's agricultural sector. These results are expected to result in positive outcomes of improved farm incomes and reduced poverty in rural areas as well as human capital development in terms of better nutrition for longer-term positive impacts towards sustainable economic growth and development.

15. **The project responds to the objectives of the World Bank Group's Country Partnership Framework (CPF) (Report No. 97823-LS) for the period FY16-20** which aims to: (i) Improve Public Sector Efficiency and Effectiveness; and (ii) Promote Private Sector Job Creation. In this context, proposed project interventions are directly in line with three of

the four strategic areas identified for action under the "Private Sector Job Creation" pillar: (i) improve smallholder and Micro, Small and Medium Enterprises (MSME) productivity in agriculture, (ii) increase water supply for irrigation, and (iii) diversify the economy. The Program Learning and Results (PLR) currently under preparation and expected to be submitted to the Board in May 2019, emphasizes climate resilience and improved agricultural productivity as one of its strategic objectives. The activities under the proposed project will contribute to achieving these objectives.

II. PROJECT DESCRIPTION

16. **The proposed SADP-II supports a new paradigm shift that puts climate resilience, productivity, commercialization and nutrition at the core of agriculture growth in Lesotho.** The project seeks to: (i) introduce transformational changes in the agriculture sector by promoting solutions for agricultural productivity and resilience at farm and landscape levels; (ii) provide longer-term solutions at institutional level to ensure the sustainability of the outcomes achieved in the field; (iii) promote commercialization that would contribute to improved livelihoods; and (iv) promote better nutritional outcomes towards improved human capital development. This approach is reflected in the project design, ensuring that investments promoted by the project and efforts to reduce farmers' climate vulnerability, enhance their resilience and ensure that smallholder farming remains a financially viable economic activity.

17. Project Design. Project components have been developed through the lens of all three pillars of CSA, i.e. productivity, adaptation and mitigation to promote the triple wins of CSA in Lesotho's agriculture sector. In this context, the design is underpinned by the findings and recommendations of the Lesotho Climate Smart Investment Plan (CSIP). The CSIP has developed a normative vision and CSA goals for Lesotho's agriculture sector as well as pathways for achieving the vision and goals. It has prioritized key policy actions and investments towards building a productive, climate-resilient and low-emissions agriculture sector in Lesotho. Tables 1 and 2 below indicate Lesotho's CSA goals and strategies for achieving these goals.

Table 1. CSA Goals for Lesotho

Productivity	Adaptation	Mitigation
Increase yields of major staples by a factor of 2.5	70 percent of arable land are planted to stress-tolerant crops; 70 percent of livestock breeds are climate-smart	Reduce livestock emissions intensity by 25 percent compared to business as usual
Increase land area devoted to biofortified crops by 60 percent	60 percent of cropland under CSA and agroforestry; 60 percent of rangeland rehabilitated or under improved management system	CSA practices adopted by 70 percent of farmers
Reduce losses across agricultural value chains including post-harvest losses to less than 5 percent	Increase forest cover to 10 percent of total land area	Increase investments in agricultural research and extension to 10 percent of agricultural budget
Increase agricultural exports by a factor of 2.5	Increase land under irrigation to 70 percent of irrigation potential	

Table 2: Strategies for achieving Lesotho CSA goals

Climate-resilience and nutrition security	Commercialization	Capacity development
Agricultural diversification	Agricultural value chain	Agricultural research and extension
Stress-tolerant crop and livestock breeds	Commodity standards	Knowledge development
Biofortified crops	Warehouse receipt system	Integrated weather and market advisories using Big data and ICT
CSA practices at the farm level	Greenhouse agriculture	
Landscape approaches	Market infrastructure development	

18. The CSIP demonstrates that despite low agricultural productivity and high influx of food imports, the situation could be reversed if farmers would commit to diversifying their production and prioritizing commercialization with appropriate support from policy makers**.** Much of Lesotho's agro-ecology is unsuitable for competitive maize production with the cost of maize production in-country higher than the cost of importing from South Africa. Diversification from maize to other commodities (such as high value horticulture) is therefore a key recommendation under the Plan. Other strategies for promoting a climate-resilient agricultural sector identified by the Plan include promotion of biofortified crops, commercialization and strengthening of value chains, and knowledge development and capacity building for implementation of CSA practices. By providing support for: (i) training and investments in proven CSA technologies; (ii) improving irrigation delivery and management services; and (iii) the development of high-potential value chains and incentivizing a shift from cereal production, the proposed project strives to align with the recommendations of the CSIP in building a productive, resilient and low-emissions agricultural sector in Lesotho.

19. *Smallholder Agriculture Development Project (SADP).* The design of the proposed project has also been informed by the achievements and lessons learned under the ongoing SADP, an IDA Credit in the amount of US$20 million and IFAD co-financing of US$10 million, which became effective in November 2012 and scheduled to close on February 28, 2020. The development objective of the project is to: "increase marketed output among project beneficiaries in Lesotho's smallholder agricultural sector". Towards this, SADP is providing training in new and improved technologies as well as competitive grants for increasing productivity and marketable surplus to smallholder farmers in seven districts of Lesotho: Botha-Bothe, Leribe, Berea, Mafeteng, Maseru, Mohale's Hoek and Quthing (the last three were added through the Additional Financing in 2017).

20. Under SADP, farmers have been trained in good agricultural practices, including climate smart technologies, such as drip irrigation. Such training, together with grant financing support, has increased knowledge and adoption of modern technologies that have enhanced production, increased market access and improved livelihoods. Since the start of project implementation in 2012, the percentage of targeted beneficiaries that have adopted improved production technologies and farming practices has increased by 144 percent. The number of new business contracts between farmer groups and the private sector increased by an estimated 20 percent and over 56 percent of beneficiaries record better access to markets. To date, the project has provided 757 grants and reached a total of 74,224 beneficiaries through the competitive grant scheme (an equivalent of 22,492 households). Major areas of support included protected piggery production (131 grants), protected agriculture production through tunnels and shade nets (299 grants) and processing and fruit drying (167 grants). Women participation is estimated at 59 percent. The household commercialization levels in project areas (percentage of produce sold over percentage of production) has increased from 15 percent in 2012 to 76 percent in 2018 (an increase of nearly 500 percent). The project's Monitoring and

Evaluation (M&E) system as well as site visits demonstrate strong evidence of the project's success in achieving its development objectives as well as resulting in the positive outcomes of job creation in Lesotho's agriculture sector as well as improved rural incomes. A detailed impact assessment is currently underway to document project achievements on the ground.

21. While the project is benefitting a large swath of the farming community, Lesotho's smallholder farmers continue to be resource constrained, lack access to finance as well as knowledge to undertake, expand or maintain productive and sustainable farming operations. Commercial banks remain reluctant to lend to farmers and agri-enterprises given the inherent risks in agriculture. While demand for grant financing support is high under SADP, the project is unable to finance all qualified applications due to limited resources. For e.g., under the last round, over 750 proposals were received, and while 403 qualified for funding, only 150 could be financed (27 percent).

22. Given the continued need and high demand for support to increase productivity, SADP–II will continue to assist smallholder farmers with grant financing and technical assistance as under the ongoing SADP. However, SADP-II will also take such support to a higher level by emphasizing commercialization, and in this context, the size of matching grants will be increased to enable recipients to undertake critical investments and address bottlenecks both upstream and downstream of project-supported value chains for more marketable, profitable and sustainable returns.

23. While the activities of the ongoing SADP are being implemented in seven districts of Lesotho, the SAD -II will be scaled up and interventions will be undertaken in all ten districts to expand the reach of the project and benefit a larger number of farmers. Any future support in the agricultural sector will also need to address the issue of human capital development in terms of improved nutrition. While the ongoing SADP did not have specific interventions in support of this, the proposed project seeks to improve access to sufficient, safe and nutritious food among Lesotho's rural population. These design elements, informed by the ongoing SADP, are expected to result in the positive outcomes of improved import substitution and increased exports in the project-supported value chains as well as job creation and improved rural incomes.

24. Project Cost. The total project cost is estimated at US$57 million. This includes an IDA financing of US$50.0 million, Japanese Policy and Human Resources Development (PHRD) Grant financing of US$2.0 million and a beneficiary contribution of approximately US$5.0 million.

25. Project Duration. The proposed duration of project implementation is seven years to enable satisfactory implementation of proposed activities and achievement of the PDO.

A. Project Development Objective

PDO Statement

26. The project development objective is to support the increased adoption of climate smart agricultural technologies in Lesotho's agriculture, enhanced commercialization and improved dietary diversity among targeted beneficiaries.

PDO Level Indicators

27. The following key indicators will measure progress toward the PDO. Additional gender and youth indicators will also be used as detailed in the Results Framework.

- Land area under sustainable landscape management practices (CRI, Hectare)
- Household commercialization level in project area (Percentage)
- Farmers adopting climate smart agricultural technologies (Number)
- Household consumption of diversified food and food products (disaggregated by women and children)

B. Project Components

28. The following four components are envisaged under the project:

Component 1: Promoting Climate Smart Agricultural Practices and Advisory Services (SDR18.72 million, US$26.0 million)

29. This component aims at strengthening the adaptive capacity of smallholder farmers to adjust and modify their production systems to minimize the potential future impacts from climate variability. The component focuses on: (i) scaling-up the adoption of climate smart agriculture (CSA) technologies by farmers and enhancing farm management practices aimed at improving soil health, water-use efficiency, crop diversification, and farm productivity; (ii) promoting more efficient use of surface water accompanied with more sustainable use of groundwater, leading to improved availability and quality of water at the farm level; and (iii) improving access to climate and market advisory services through Information and Communications Technology (ICT), thereby strengthening farmers' adaptation and resilience.

30. **Sub-component 1.1 Capacity Building in CSA Practices (SDR1.44 million, US$2.0 million).** The aim of this sub-component is to increase the knowledge and skills of farmers and agro-processors, national- and district-level extension staff as well as agro-dealers in well-tested and proven climate smart agricultural technologies. The training program would comprise a menu of CSA technologies, including, *inter alia*, *improved and stress-tolerant seed varieties* (high yielding varieties, nutrient dense crops, heat, drought and pest and disease resistant varieties); *conservation agriculture and integrated soil fertility management* (minimum tillage, crop rotations, crop residue management, contour ploughing, terracing, soil testing and fertility management practices); *irrigation* (drip irrigation, sprinkler irrigation, water harvesting, protection against water and wind erosion, infiltration weirs to improve recharge while reducing erosion); *agroforestry* (establishment of seed multiplication and tree nurseries, fruit tree cultivation, windbreaks, hedgerows, farmer-managed natural regeneration); climate-smart livestock production (improved animal nutrition, quality control of livestock products, animal disease surveillance). Annex 2 provides a list of CSA practices to be potentially supported under the project.

31. The project will finance the design and implementation of farmers' field schools (FFS), train-the-trainers program, and ICT-based knowledge systems for technology demonstration and diffusion. Project interventions will strengthen the country's agricultural extension services by addressing the CSA skills gap of extension officers who will train lead farmers in their agricultural communities, who will in turn train follower farmers. Extension officers and farmers will have access to targeted trainings and field-based learning, including workshops, site visits, demonstrations, and CSA practice pilots. In addition, agro-dealers will also be trained to improve their knowledge of the different type of fertilizers, seeds and pesticides as well as their properties and effectiveness. This would help agro-dealers undertake effective demonstrations for increasing farmers' knowledge of input management strategies tailored to their specific conditions and needs.

32. **Sub-component 1.2 Rehabilitation and Modernization of Irrigation Infrastructure (SDR10.8 million, US$15.0 million).** This sub-component aims to increase climate resilience and productivity in areas of high agricultural potential, through improved water use efficiency and increased access to irrigation. Given the critical need for irrigation in Lesotho,

the GoL has requested World Bank support for irrigation under the SADP-II in parallel with the preparation of a National Irrigation Master Plan (NIMP) under the ongoing SADP. As the NIMP is expected to take approximately 8-10 months to complete, a first level of interventions, viz. "no-regret" investments will be financed to identify, assess and fully restore existing irrigation infrastructure to original as-designed status. Such no-regret investments will be undertaken in areas of high agricultural potential and will involve no water abstraction from transboundary water sources. Selection of these investments will also be guided by the findings of stages one and two of the NIMP ("strategic direction setting" and "situation analysis"), which should provide a robust overview of the physical and institutional baseline, and the challenges and opportunities for the irrigation sector. The second level of interventions will be informed by the recommendations of the NIMP and to this end the project will finance rehabilitation and modernization works that may include expansion of irrigation to prioritized areas with good potential for agriculture development. For rehabilitation of existing infrastructure, the memorandum for an exception to notification under OP 7.50 was approved by the regional Vice President of the World Bank on April 26, 2017. The memorandum also indicates that no project funds will be utilized for expansion of irrigation schemes unless GoL has processed the riparian notification requirement under OP7.50 in a manner satisfactory to the World Bank. This sub-component will support the following activities:

33. ***Sub-component 1.2 (a). Support for Rehabilitation of the Existing Irrigation Infrastructure (SDR3.6 million, US$5.0 million).*** This sub-component will constitute a set of first level interventions that will comprise "no-regret" investments. Potential no-regret activities include:

- **Surface water irrigation scheme** developments, involving the rehabilitation and modernization of existing irrigation schemes, including: (i) the securing of water sources and reliable supply through repair or provision of small dams, reservoirs and/or pump stations; (ii) repair or replacement of headworks, conveyance system canals and pipelines, and irrigation system structures and installations; and (iii) supply and installation of distribution and on-farm pressurized and/or pipeline systems and auxiliary irrigation equipment.
- **Groundwater irrigation supply** facility provisions, comprising repair of existing or installation of new groundwater abstraction systems (tube wells) where considered technically feasible.
- **Rainwater harvesting system** developments, covering: (i) rainwater run-off collection, through provision of household surface ponds to receive run-off water from adjoining lands; and (ii) rain and flood water run-off retention, land conservation and soil erosion reduction through formation of low earth embankment dams at field level to retard run-off flows.

34. The proposed sub-component will also support relevant local institutions, both off- and on-farm, to modernize their existing water resources management systems both physically and operationally and consistent with the stated need for high-value efficient and viable irrigated fruit and vegetable crops production. Physical modernization will include: (i) mechanization/automation of headworks and other hydraulic controls; (ii) lining of open conveyance canals or replacement of these by pipelines; (iii) modernization of flow division, water level control, and turn-out structures/systems; (iv) provision of distribution- or farm-level pumped and pressurized pipeline systems; and (v) installation of on-farm trickle, drip or other modern water application systems. The operational modernization will include the development of computerized tools, models and methods for assessing water supply and demand balances, monitoring flows, scheduling irrigations and otherwise assisting with operational decision-making both at irrigation and water resources management levels.

35. Corresponding high priority comprehensive multidisciplinary studies will also be implemented to quantify the basin-level water balance aspects and impacts of likely future lowlands irrigation development scenarios as well as to assess the levels of significance of these in the context of transboundary water quantity apportionments. As the importance of groundwater uses, for example for smallholder farming and municipal/domestic water supply, is growing

significantly, aquifer characterization and development studies would be an additional potential area for project support towards water resources management in the country.

36. ***Sub-component 1.2 (b). Support for Investments defined by the National Irrigation Master Plan (SDR5.76 million, US$8.0 million)***. Activities under this sub-component will support a set of second level interventions that will be identified, prioritized and financed following completion of the NIMP. These may include expansion of irrigated agriculture to the prioritized areas with relatively good soil and water resource characteristics, increasing upstream storage capacity, construction of smaller, lined reservoirs downstream, tube-wells as well as project support to farm-level investments in drip irrigation and installation of pumps. Production systems suited to higher water use efficiency will also be encouraged (e.g., protected vegetable production, fruit trees). Investments recommended by the NIMP may, therefore, involve implementation of new subprojects or schemes that will require riparian notification and hence availability of Bank's financing will be subject to GoL's compliance with the condition relating to the carrying out of the relevant riparian notifications in a manner satisfactory to the Bank.

37. Improved water use efficiency will be the underlying aim of the proposed investments in irrigation infrastructure. Proposed interventions above relate to relatively larger and organized community and/or commercial irrigated agriculture schemes. The project will also provide matching grant support (under component 2) to smallholder farms and individual home-based horticultural operations as these are determined to have been reasonably successful and of high importance in the agricultural sector. Depending on the situational needs at individual locations, the project will support expansion of the scope of these interventions to include provision of small-scale low-tech irrigation systems based on use of local ponds, wells or expanded domestic water supply systems and potentially including hand pumps (treadle, rope, etc.), simple hose or pipe delivery lines, and basic in-field application systems (e.g. porous jars or pipes, low-tech drip, etc.)

38. Selection criteria for investment schemes for project support will include: an existing group of smallholder users working together to manage water delivery, good agricultural potential and community support for current and future water use. Where feasible, the rehabilitation of irrigation infrastructure and provision of technical assistance under the proposed project will also be in areas where the ongoing SADP is already active to deepen project benefits and impacts. The final selection of development interventions will involve the PMU, District Agricultural Officers (DAOs), District Engineers and the Community Development Officers.

39. ***Sub-component 1.2 (c). Development and Strengthening Irrigation Institutions (SDR1.44 million; US$2.0 million)***. To ensure sustainability of the rehabilitated infrastructure and promote water use efficiency, the project will develop and strengthen irrigation institutions. Towards this, the project will assist GoL to: (i) establish independent, financially-autonomous irrigation service providers responsible for the management and maintenance of off-farm irrigation infrastructure and for water delivery to final users; (ii) support the transition of existing national and district level institutions to the new institutional framework; and (iii) establish and strengthen the capacity of these institutions through the provision of technical assistance, goods, works and training. The project will also support the strengthening of effective institutional links between the Ministry of Water Affairs which is responsible for overall water use management, the Crop Department of the Ministry of Agriculture and Food Security (MAFS) which is responsible for irrigation and the community-level institutions that guide water use at local level.

40. Support to these institutions will also include the establishment of Irrigation Water Community Organizations (IWCOs) where feasible, an outline of the new roles and responsibilities for national and district level institutions, and recommendations on how to shift from the current institutional structure to the new one. A participatory, scheme-level capacity building program will be used to build the skills of IWCOs, local leaders and District level staff. Many of the

irrigation systems currently in use involve groups of farmers that are too small to warrant formation of viable IWCOs. In these scenarios, simpler, more flexible organizational formats for group management of water resources will be developed.

41. **Sub-component 1.3. Support for Investments in Soil Fertility *Management (SDR3.6 million, US$5.0 million).*** Given the declining soil fertility levels in Lesotho and its adverse impacts on agricultural productivity and the critical need to build climate resilience, the project will provide investment support for soil fertility management interventions as follows:

42. ***Sub-component 1.3 (a). Support to Lesotho Soil Information System (SDR1.08 million, US$1.5 million).*** The aim of this activity is to disseminate information on nutrient status and agricultural productivity potentials of soils among farmers. This will involve support for updating soil capability and suitability assessment, soil survey mapping, dissemination of soil and crop suitability products, and advocacy for sustainable soil management. Support will also be provided to ensure continuity of data generation and database management.

43. ***Sub-component 1.3 (b). Establishment of a State-of-the-art Laboratory (SDR1.08 million, US$1.5 million).*** To promote soil testing services to deliver soil health solution packages to farmers the project will finance the cost of state-of-art laboratory equipment for detecting macro and micro nutrient status of the soil, thereby facilitating the recommendation of fertilizers to ameliorate the nutrient constraints. Support will also be provided to incorporate the private sector and sustainable business approaches so that the soil testing services can be run in a commercially viable way.

44. ***Sub-component 1.3 (c). Construction of Fertilizer Blending Facility (SDR1.44 million; US$2.0 million)*.** The project will support the construction of a fertilizer blending (customized balance by adjusting fertilizer inputs to crop requirements) plant to produce and formulate fertilizers to address site-specific soil nutrient deficiencies and meet crop nutrient requirements in Lesotho. The fertilizer blending plant will also introduce the major, secondary and micronutrients that are essential for nutritional security in the country. The project will finance shed construction, knob blocks, blender and bagging equipment, loader, warehouse, and operating expenses for the first 3 years. Capacity building will also be provided to ensure efficient operation of the facility. The fertilizer blending facility will be promoted as joint ventures between farmer organizations, private firms, and government (central, district), and may over time transfer their shares to the general public through equities or debts.

45. **Sub-component 1.4. Integrated Climate, Weather and Market Advisory Services (SDR2.88 million, US$4.0 million).** The project will finance the development of real-time agro-weather forecasting and marketing information system and their dissemination tools to improve farmers' long-term capacity for adopting CSA technologies, managing weather shocks and climate risks, and sustaining agricultural production under changing climatic conditions. This sub-component will finance the following activities:

46. ***Sub-component 1.4 (a). Segmenting and Registering Farmers and Value Chain Stakeholders*** **(SDR0.86 million, US$1.2 million)** The proposed project will finance the costs of segmenting and registering farmers, agro-pastoralists, pastoralists, and other value chain stakeholders in Lesotho. Other stakeholders to be registered will include agro-dealers, stockists, processors, agri-entrepreneurs and innovators, and technical service providers covering crop, agro-pastoral, and pastoral systems. The proposed project will finance the procurement of ICT equipment and the hiring and training of about 20 enumerators in using smartphones/tablets to collect data for each district.

47. ***Sub-component 1.4 (b). Digitizing Agricultural Statistics (SDR0.14 million, US$0.2 million)*.** The project will

finance the collection and digitization of historical agricultural statistics (production area, farm sizes, crop yields and livestock/fisheries productivity), currently available in hard copies. Investing in rigorous time-series data and automated methods of capturing and collecting agricultural statistics will have several benefits, including: (i) improved commodity production forecasts; (ii) improved food security Early Warning System; (iii) better spatial planning and optimum land use; (iv) improved targeting of weather and market advisories and extension services; and (v) providing information for agricultural insurance.

48. ***Sub-component 1.4 (c). Developing the Lesotho Agro-weather Tool and Improving Delivery of Integrated Market Information and Advisory Services (SDR1.44 million, US$2.0 million).*** The project will finance the development of an ICT platform that will help famers make informed decisions on what, when, where, and how to produce. Agricultural time-series data will be combined with weather observations (at daily resolution from agro-meteorological stations/satellite data) and soil and water management factors to: (i) reveal climate and weather patterns; and (ii) detect the limiting factors for agricultural production. The Lesotho Agro-weather tool will leverage the geospatial capability of the World Bank's Agriculture Observatory that supplies real-time, high resolution agricultural weather information covering croplands and rangelands globally.[6] The platform can be used for effective early warning of potential yield and food production shocks several weeks in advance of normal harvest periods. Subsequently, information from the Lesotho agro-weather tool will be used to generate real-time and site-specific recommendations on crop cultivars, soil preparation, sowing rate and time, fertilization, irrigation, pest and disease control, and harvest time. In addition, these data will be combined with market information from the Market Information System to provide value chain advisory services to users. Agro-weather data and market information will be scaled down and packaged into actionable advisory messages. Multiple information delivery channels, including SMS and mobile phone applications, web-portal, and knowledge bank systems will be used for dissemination of information, in addition to the more conventional channels such as radio, television, bulletins, and print.

COMPONENT 2: Improving Agricultural Commecialization and Nutrition (SDR17.28 million, US$24.0 million of which IDA: SDR12.24 million, US$17.0 million; PHRD Grant US$2.0 million; Beneficiary Contribution SDR3.6 million, US$5.0 million)

49. This component will provide much-needed financial support to farmers and agro-processors benefiting from the technology training and irrigation support provided under Component 1. The provision of irrigation, for e.g., would improve the potential of year-round water availability that is critical to improving agricultural productivity and commercialization in Lesotho's agriculture. Financing support in the form of matching grants will enable the cash-constrained farmers to capitalize on the availability of irrigation and training in CSA technologies for on-the-ground productive and sustainable investments. Investment support will be provided in selected high potential value chains (VCs), including horticulture, potatoes, small-scale piggery and small-scale poultry. The component will support horizontal and vertical alliances that would result in the integration of a greater number of smallholder producers in these potentially remunerative VCs, incentivize contract farming, build trusted commercial partnerships between farmers and private agri-businesses and drive enterprise operations towards more lucrative domestic and export markets. Support in horticulture and livestock value chains will also contribute to improved nutritional outcomes as it will improve availability of and access to diverse nutrient-dense foods such as fruits and vegetables as well as protein-rich dairy and meat products. Activities under the component are therefore expected to result in the positive outcomes

[6] The platform is based on a concept of "virtual weather stations" that are generated from a combination of existing meteorological ground stations, satellite platforms, and the application of big data, artificial intelligence, and machine learning. The platform allows resource managers to monitor actual weather patterns and to make projections of expected agricultural production, crop yields and forage quality in the areas under investigation.

of job creation, improved beneficiary incomes, better nutritional outcomes and increased economic opportunities for women and youth in the rural sector.

50. **Sub-component 2.1. Support for Horizontal Alliances (SDR1.08 million, US$1.50 million).** The sub-component will finance support for the formation of new alliances for service- and market-related activities as well as strengthen the existing alliances among farmers. The multi-fold benefits of horizontal alliances, including, *inter alia*, sharing of market information, building economies of scale for input supply, product assembly, transport, packaging and storage as well as effective capacity to negotiate and enter into supply agreements with off-takers will enable farmers improve their on-farm productivity as well as enhance their opportunities to access markets. The alliances would range from formal associations to informal "WhatsApp" groups according to the interests, objectives and means of the members. The project will provide training in organization, governance, bookkeeping, business development, procurement and marketing.

51. Where feasible, the formation and strengthening of horizontal alliances will draw on the Smallholder Horticulture Empowerment Project (SHEP) approach developed by the Japan International Cooperation Agency (JICA). This approach shifts smallholder thinking from subsistence farming to farming as a business by training farmers to conduct their own market surveys to identify local crops with potential for commercialization; training them to grow these crops profitably; organizing stakeholder forums to exchange information with other like-minded farmers, input suppliers and potential buyers; and by helping them to build good relations with these market agents. In response to this training, farmers are expected to shift their thinking from "grow and sell" to "grow to sell,". To date, this approach has benefited over 60,000 farmers in 23 African countries. In Lesotho, a total of 103 farmers in five farmer groups are now using the SHEP approach successfully in three districts (Leribe, Butha-Buthe and Quthing). The project will scale up this approach and replicate it in other districts of the country. JICA trained extension officers would contribute to this effort. Training and assistance will also be provided to design, negotiate, manage and carry out productive partnerships as outlined under sub-component 2.2.

52. The formation and strengthening of horizontal alliances will be facilitated by an international or local business development service provider that has extensive experience of group dynamics and familiarity with the culture and ethos of Basotho farmers. This will help to offset the social capital building challenges as experienced under the ongoing SADP.

53. **Sub-component 2.2. Vertical Alliances and Commercialization (SDR10.44 million, US$14.50 million).** The sub-component will target support to commercial and semi-commercial off-takers (micro-, small- and medium agro-enterprises) to drive their operations towards more lucrative domestic and export markets while simultaneously providing smallholder farmers opportunities for increasing agricultural productivity and commercialization. Two matching grant windows are envisaged as follows:

54. ***Sub-component 2.2 (a). Matching Grants for Improving Smallholder Productivity (SDR8.64 million, US$12.0 million).*** Smallholder farmers will have access to matching grants to finance investments for increasing on-farm productivity in high potential VCs including horticulture, potatoes, dairy and small-scale pig and poultry as under SADP. Grants will be demand-driven and provide for a menu of eligible activities, including, *inter alia*, small farm implements and equipment, climate adaptive technologies such as shade nets, tunnel houses, drip irrigation and water storage equipment, improved seed varieties and seedlings, improved livestock breeds, agro-processing equipment, packaging equipment, and storage - where these investments lead to increased production and marketed surplus for the selected value chains. The cost of land surveys will also be considered where farmers need secure land ownership to secure the benefits of their investment.

55. Maximum grant size will be limited to $US30,000 per applicant (individual or group). Grants of less than $US10,000 will require a 20 percent equity contribution and grants of $US10,000 to $US30,000 will require a 25 percent equity contribution. Based on experience with SADP, in-kind equity contributions will not be considered as they are difficult to measure and verify. The equity contribution has been kept low to compensate for this. Grant applications by farmer groups will need to demonstrate that the group has been operating for at least 12 months and that it has independently implemented other activities to achieve group objectives.

56. Horticulture farmers supported in the Maseru district would benefit from access to the market center in Ha Tikoe Industrial Estate through increased productivity and production supported through the provision of TA and grants. The Lesotho National Development Cooperation (LNDC) is currently in the process of operationalizing the market center. The venue will provide easy market access to farmers within proximity of the center.

57. ***Sub-component 2.2 (b). Matching Grants for Agri-Enterprises (SDR1.8 million; US$2.5 million).*** Aggregators, processors and other business enterprises involved in the project value chains will have access to matching grants to facilitate investments in postharvest infrastructure and management, including upgrade or construction of processing facilities, cold storage equipment, alignment with international health and safety standards, calibrating/sorting/grading machines, packaging, product development etc. Grant size will range from $US30,000 to $US100,000. All grants under this program will require an equity contribution, in cash, of 40 percent of the total value of the investment.

58. To encourage productive partnerships between smallholder farmers and off-takers, agri-enterprise applicants will need to express a clear commitment to source raw materials from local farmers and a willingness to build effective commercial relationships with smallholder suppliers. Business plans for grant support must estimate the quantity and quality of raw materials they are seeking from farmers and express a clear commitment to building good business relations with farmer suppliers. They will also need to provide an estimate of the direct employment their investment will generate. Those with viable business plans will be screened to assess the extent to which their investment proposals will drive commercialization by farmer suppliers and the level of direct employment generation. Start-up enterprises will not be eligible for project support.

59. Where feasible, market linkages will be built through supply contracts between producers and buyers or aggregators, which specify the volumes to be traded, quality requirements, delivery mechanisms and prices. These contracts will also allow for surplus production, over and above the contracted amount, to be sold elsewhere for additional income. Where aggregators/buyers have adequate scale and resources, supply contracts will also provide for input provision, seasonal finance and extension advice. Less formal VC links based on good communication, continuous commercial interactions and trust will be built where aggregators and/or suppliers lack the capacity to benefit from formal contractual relations. Key value chain actors will benefit from study tours to regional enterprises with advanced knowledge of and experience with handling and processing VC commodities at similar scale.

60. A national or regional business development organization or NGO will be contracted under the project to work with farmers and agri-enterprises to build capacity at all points along the value chain, foster and strengthen linkages between VC actors, broker contracts and improve business management. The service provider will have a sound understanding of the productive alliance approach, farming sector in Lesotho, wide experience with value chain development and a good understanding of local and regional markets. The service provider will provide tailored training and advice for the preparation of high quality, fundable grant proposals and related business plans and business management to potential grantees. All grant applicants would be required to undertake this training which will be included as a criteria of grant screening. This will ensure viability and quality of the investment financed. This training

will also be provided to extension staff (training of trainers) to enable them to continue such training beyond the life of the project.

61. The procedures and selection criteria used for both matching grant programs have been detailed in a Grant Manual. The Grant Manual specifies implementation arrangements of the Matching Grant Programs and includes appropriate technical, fiduciary, environmental and social safeguards provisions to ensure that the grant funds will be used for intended purposes only. It also includes the Bank's Anti-Corruption Guidelines and consequences should the agreed commitments not be met. Any changes to the Grant Manual during project implementation will require prior World Bank approval. The PMU will be responsible for administering the Grant Scheme.

62. **Sub-component 2.3. Improved Nutrition (SDR2.16 million, US$3million of which IDA: SDR0.72 million, US$1 million; PHRD grant: US$2 million).** The objective of this sub-component is to improve dietary habits and practices among project beneficiaries. Towards this, the project will promote increased dietary awareness through improved knowledge of nutrition, increased household production and consumption of high-nutritious foods and food products as well as small-scale processing in nutrition-sensitive value chains. This partially PHRD-financed sub-component will be an integral part of the overall project that seeks to mainstream nutrition within the value chains supported under the project.

63. Sub-component interventions will be implemented in close collaboration with the proposed Nutrition and Health System Strengthening Project (P170278), a US$60 million IDA Credit operation currently under preparation and expected to be approved by the World Bank Board in mid-November 2019. The proposed project is being designed to improve utilization and quality of health and nutrition services and strengthen key institutions to contribute to reduced under-five stunting and child and maternal mortality rates in Lesotho.

64. This sub-component will finance the following activities:

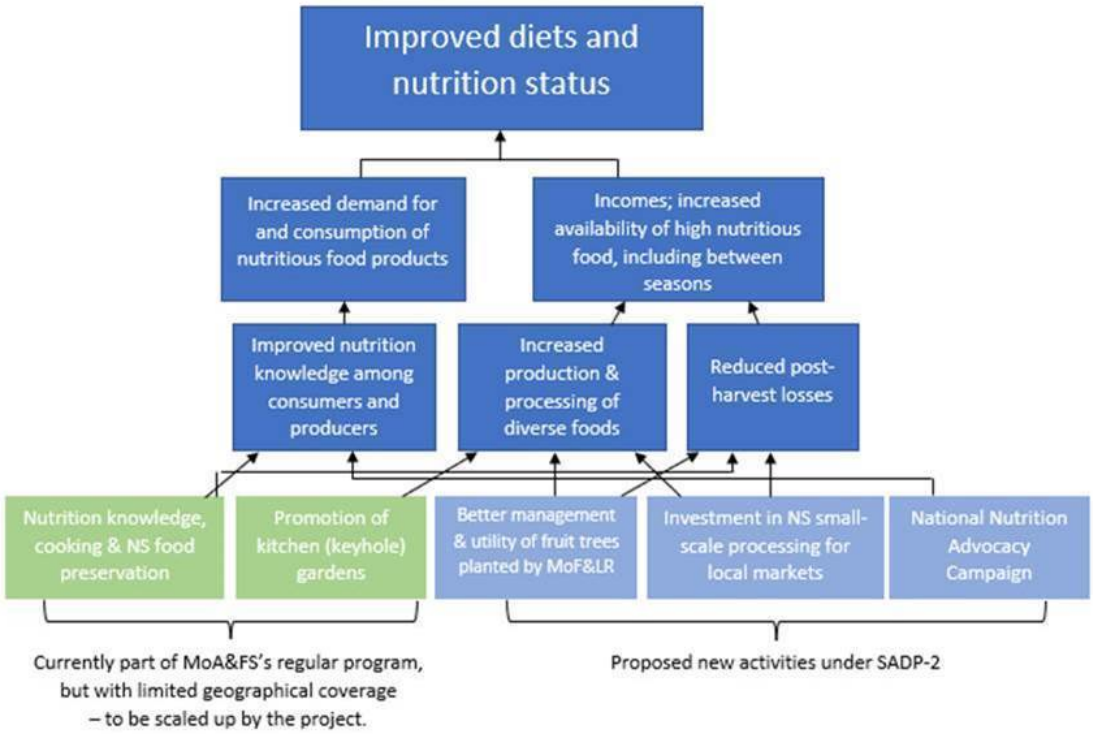
65. ***Sub-component 2.3 (a). Advocacy Campaign on Nutritious Diets (PHRD Grant US$0.5 million)*** National public awareness campaigns will be financed under this sub-component to increase the knowledge among the people of Lesotho of the benefits of dietary diversity. In addition to media campaigns, the PHRD grant will finance the development of industry guidelines for sugar, salt, and fat content, nutrition fortification in food products, and labelling through stakeholder consultations. The purpose of this work is to provide guidance for domestic food processors as well as retailers and food services on appropriate levels of nutrient value in food products in an effort to address Lesotho's double burden of malnutrition and obesity. The work on public awareness and advocacy activities will be coordinated by the Food and Nutrition Coordination Office (FNCO) and other partners. Beyond improved nutrition status in the population, increasing intake of high-nutritious foods among the population may also increase demand for the high-nutritious food products and thus generate incomes for the farmers and off-takers supported under Component 2.2 of the project.

66. ***Sub-component 2.3 (b) Community-based Dietary Knowledge (PHRD Grant US$0.8 million).*** Activities to enhance knowledge on diets and nutrition will be delivered through MAFS coordinated Nutrition Clubs through nutrition education and demonstrations on production, processing, cooking, food safety and storage. Existing or new Nutrition Clubs will be utilized. The main promoters would be the Ministry's own Area Technical Nutrition Officers that are already working in the District Agricultural Offices (currently 40 staff). The MAFS's Nutrition Unit currently promotes nutrition through a positive deviance model (a well-tested approach to behavioral and social change based on the observation that in any community there are people whose uncommon but successful behaviors or strategies enable them to find better solutions to a problem than their peers, despite facing similar challenges) combined with nutrition training, food

demonstration activities, and promotion of keyhole gardens. While the approach has been successful, the program is ongoing in a small number of communities due to limited operational funds. The project will scale up this program to cover all ten districts of Lesotho and as many communities as possible. The project will finance education material for community training, food preparation, and other demonstrations, as well as travel costs for the Area Technical Nutrition Officers. Further, over the course of implementation, the project will finance training for the Area Technical Nutrition Officers to further strengthen their expertise with the latest evidence on nutrition and diets.

67. ***Sub-component 2.3 (c). Investment Support for Nutrition-Sensitive Food Supply Chains (PHRD Grant US$0.70 million; IDA SDR0.72 million, US$1.0 million)***. The activities promoted by the Nutrition Clubs are expected to generate interest among beneficiaries for investing in small-scale, nutrition-sensitive production and processing. Under this sub-component, small grants ranging between US$2,000 and US$20,000 will be provided to individuals to finance investments for production of nutritious foods at the household level (home gardens, keyhole gardens). This would include, *inter alia*, improved, bio-fortified varieties of seeds, organic as well zinc fertilizers, and small farming equipment that would contribute to ensuring year-round production and availability of nutritious foods at the household level. Grants will also be provided for small-scale processing, for e.g., the purchase of small equipment such as fruit dryers, and for canning, labeling and the like. Such grant support would also serve to provide income-generating opportunities as the processed products (such as jams, sauces, juices) could be sold in local markets for generating increased household incomes. The sub-component would seek to empower women by targeting such support primarily towards them. The total allocation of the grant program is US$1.70 million, of which PHRD financing would comprise US$0.70 million and IDA contribution would be in the amount of US$1.0 million.

Figure 1. Results Chain of Improved Diets and Nutrition



COMPONENT 3: Project Management, Coordination, Monitoring and Evaluation (SDR5.04 million, US$7.0 million)

68. This component will support project management, coordination, monitoring and evaluation (M&E) of project activities. The existing Project Management Unit (PMU) within MAFS that is implementing the ongoing SADP will be responsible for SADP-II implementation including fiduciary aspects (including audits); knowledge management/communication (including public awareness campaigns); grievance redress mechanism; citizen engagement; and monitoring the implementation of safeguard related measures. It will finance PMU staff related costs (training etc.), goods, equipment and vehicles, incremental operating costs, assessments/analyses/studies for preparation of future projects/operations, and other eligible expenses associated with overall project implementation. Support will also be provided for social/results/impact surveys at project mid-term as well as project completion. Additional periodic surveys will be supported to improve project implementation, for example to assess and improve women and youth participation. The monitoring and evaluation (M&E) system will be strengthened to improve the efficiency of data collection, analysis, evaluation and reporting. The GoL has expressed interest in contributing an amount of US$8.0 million equivalent to support project implementation. However, the availability of these funds is not certain. If the funds become available, the specific utilization of these resources will be determined at the time.

69. The PMU of the ongoing SADP will undertake implementation of SADP-II until the closing of the ongoing SADP after which all current PMU positions will be refilled on a competitive basis. Additionally, the capacity of the PMU will be enhanced by hiring additional technical and administrative staff as needed, including, *inter alia*, irrigation engineer, agri-business/MSME value chain expert; technical specialists as needed (who will work with service providers hired for horizontal alliances, WUAs etc.); two additional support persons to administer the matching grants program; nutrition specialist and an additional project accountant to enhance financial management (FM) capacity. For environmental and social safeguards monitoring, a reputable consulting firm will be hired to ensure compliance with Bank's safeguard policies and implementation of the Environmental and Social Safeguards Framework, (ESMF), Integrated Pest Management Plan (IPMP) and Resettlement Policy Framework (RPF) and associated sub-project specific plans.

COMPONENT 4: Contingency Emergency Response Component (US$0.0 million)

70. In the event of an eligible crisis or emergency, this contingent component will provide immediate and effective response to said Eligible Crisis or Emergency, defined as "an event that has caused, or is likely to imminently cause a major adverse economic and/or social impact associated with natural or man-made crises or disasters."[7] The World Bank's assistance may consist of immediate support in assessing the emergency's impact and developing a recovery strategy or the restructuring of existing, or provision of a new, Investment Project Financing (IPF). This may be particularly relevant with the possible adverse impacts of 'El Nino' in the coming period. In all cases, the World Bank would adapt its rapid response in form and scope to the emergency's particular circumstances, in keeping with the World Bank Group's Country Partnership Framework for the country. To ensure that this component operates effectively, a Contingent Emergency Response Manual is part of the Project Implementation Manual (PIM) for specific eligible disasters, detailing fiduciary, safeguards, monitoring and reporting, and any other necessary implementation arrangements.

[7] Eligible emergency is defined in OP 8.00, Rapid Response to Crises and Emergencies.

Table 3. Project Cost and Financing

Project Components	Component Cost	IDA financing	Beneficiary contribution	PHRD financing
	(in US$ Million)			
Component 1: Promoting Climate-Smart Agricultural Practices and Advisory Services	**26.0**	**26.0**	**0**	**0**
1.1. Capacity Building in CSA Practices	**2.0**	**2.0**	**0**	**0**
1.2. Rehabilitation and Modernization of Irrigation Infrastructure	**15.0**	**15.0**	**0**	**0**
- Support for Rehabilitation of the Existing Infrastructure	5.0	5.0	0	0
- Support for Investments defined by the NIMP	8.0	8.0	0	0
- Development and Strengthening Irrigation Institutions	2.0	2.0	0	0
1.3. Support for Investments in Soil Fertility Management	**5.0**	**5.0**	**0**	**0**
- Support to Lesotho Soil Information System	1.5	1.5	0	0
- Establishment of a State-of-art Laboratory	1.5	1.5	0	0
- Construction of Fertilizer Blending Facility	2.0	2.0	0	0
1.4. Integrated Climate, Weather and Market Advisory Services	**4.0**	**4.0**	**0**	**0**
- Digitizing Agricultural Statistics	1.2	1.2	0	0
- Segmenting and Registering Farmers and Value Chain Stakeholders	0.8	0.8	0	0
- Developing Lesotho Agro-weather tool and Delivery of Integrated Market Information and Advisory Services	2.0	2.0	0	0
Component 2: Improving Agricultural Commercialization and Nutrition	**24 .0**	**17.0**	**5.0**	**2.0**
2.1. Support for Horizontal Alliances	**1.5**	**1.5**	**0**	**0**
2.2. Support for Vertical Alliances and Commercialization	**14.5**	**14.5**	**5.0**	**0**
- Matching Grants for Improving Smallholder Productivity	12.0	12.0	5.0	0
- Matching Grants for Agri-Enterprises	2.50	2.50		
2.3. Improved Nutrition	**3.0**	**1.0**	**0**	**2.0**
- Advocacy Campaign on Nutritious Diets	0.5	0	0	0.5
- Community-based Dietary Knowledge	0.8	0	0	0.8
- Investment Support for Nutrition-Sensitive Food Supply Chains	1.7	1.0	0	0.7
Component 3: Project Management, Coordination, Monitoring and Evaluation	**7.0**	**7.0**	**0**	**0**
Component 4: Contingency Emergency Response Component (CERC)	**0**	**0**	**0**	**0**
Total	**57.0**	**50.0**	**5.0**	**2.0**

C. Project Beneficiaries

71. Direct beneficiaries will include smallholder farmers (producers) and off-takers (traders/aggregators/agro-processors). Agricultural producers will benefit from increased access to irrigation and high-quality inputs, plus training in improved agronomic practices, including climate smart agricultural technologies, which will result in improved productivity and increased market opportunities. The project will also benefit agro-processors and agri-business enterprises by improving their supply of quality produce, improved post-harvest management, increasing access to finance for investment and providing training in technical issues and business management. These improvements will increase their market opportunities on both domestic and export markets. Other beneficiaries include staff from the extension service, whose knowledge and capacity to deliver technical assistance to farmers and processors will be strengthened, and Water Users Association (WUA) members whose capacity to manage irrigation services will be strengthened.

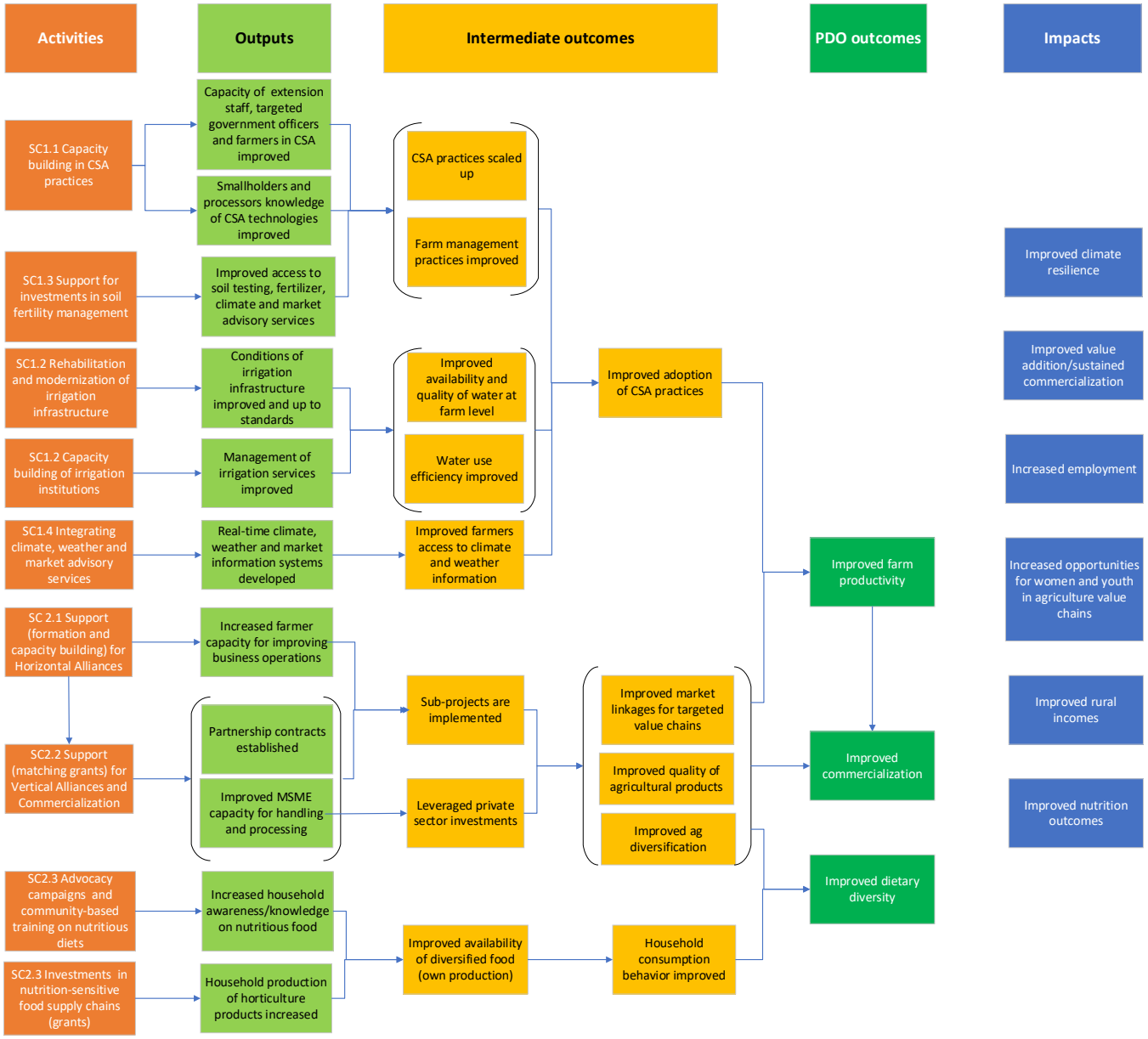
72. At farm level, the project will provide direct benefits to 150,000 farm households (approximately 750,000 people), equivalent to approximately 50 percent of the farm population. Farm households in all ten districts will have access to training programs. Grant financing will be provided to qualifying farmers (both individuals and alliances) as well as agri-enterprises. High priority will also be given to support for women and youth in all project activities. At least 50 percent of beneficiaries will include women and 35 percent will be youth (under 35 years).

D. Results Chain

73. The project addresses key challenges facing the agriculture sector that are preventing it from meeting its productive potential towards food security, human capital development in terms of improved nutrition, job creation and improved livelihoods. The proposed activities are designed to address these challenges that would contribute to broad-based agriculture sector growth, increased resilience to climate change, improved household nutrition, the reduction of poverty and an improvement in shared prosperity. Figure 2 below illustrates the Theory of Change for SADP-II.

74. Project interventions use a combination of measures to build capacity, transfer technology, promote public and private investment and strengthen agricultural markets. A strong, broad-based emphasis on training will assist farmers to acquire the skills required to create and manage viable producer organizations, understand and adopt improved agronomic practices and climate smart agricultural technologies and build effective market linkages with agri-business enterprises. At the farm-level, technology transfer will help to raise productivity. The rehabilitation of irrigation infrastructure will reduce the dependence on rain-fed farming and increase farmers' capacity to address climatic risks of droughts and erratic rainfall patterns. With increased productivity, farmers will be capacitated to enter into productive alliances with agri-business enterprises and be thereby assured of markets and incomes. Agri-enterprises in turn, through such alliances and project-supported investments in processing, storage, handling and alignment with modern quality and safety standards would have enhanced capacity to sell to end-buyers – both domestic and regional/international. Investments in high value cash crops, such as fruits and vegetables targeted under the project will increase dietary diversity and the consumption of fruits and vegetables towards improved nutritional outcomes.

Figure 2. Theory of Change for the Proposed Project



E. Rationale for Bank Involvement and Role of Partners

75. The World Bank has been providing support to Lesotho's agricultural sector over the past few years through the ongoing SADP which has been contributed to increasing agricultural productivity and marketable surplus in key value chains among targeted beneficiaries. It has increased awareness among farmers of the threats from climate change and variability and successfully initiated the uptake of CSA technologies among project farmers. The benefits accrued to project beneficiaries as well as demonstrated successes of project activities have built trust and good-will not only among the rural population but also national level stakeholders for future World Bank support. Currently, the World Bank is also supporting the Private Sector Competitiveness and Economic Diversification Project (PSCED) (P144933) that has been designed to improve the business environment for private sector development as well as building up the horticulture subsector. Assistance provided under the project includes grants for technical capacity building to improve market readiness, development of marketing tools such as websites and other branding and promotional material, and the development of business systems such as point of sales (POS) systems and accounting software. The project has trained farmers in fruit farming and established new orchards on about 46 ha of land. However, these projects have been limited in size and scope vis-à-vis the vast agenda of development needs. There is thus a critical need to consolidate the gains achieved and scale up successes to expand the reach of project benefits for deeper impacts in the agricultural sector as well as address the more urgent issues of climate change that threaten food security, nutritional outcomes and poverty levels in Lesotho.

76. The project will build synergies with several World Bank-financed operations as summarized below:

(i) The proposed Lesotho Renewable Energy and Energy Access Project (P166936) in an amount of US$52.90 million equivalent, expected to be approved by the World Bank Board on June 25, 2019, aims to scale up renewable energy-based off-grid electrification in rural and peri-urban areas of Lesotho which would provide opportunities to foster the adoption of renewable energy sources in the agricultural sector, for e.g., through the installation of solar panels for operating irrigation pumps, powering cold storage facilities by farmers and off-takers as well as running agricultural machinery, such as sorting and grading equipment.

(ii) The proposed Lowlands Water Development Project (LWDP)-Phase Two (P160672), in an amount of US$70 million equivalent, expected to be approved by the World Bank Board on May 16, 2019, has been designed to improve the supply of bulk water to the Leribe district of Lesotho, an area situated in the lowlands of the country and with high potential for agricultural growth. The proposed project thus provides opportunities for enhancing the provision of irrigation for cropping and rangeland management in the region.

(iii) The regional Agricultural Productivity Program for Southern Africa (APPSA) Project – Additional Financing (P164486), in an amount of US$20 million, approved by the World Bank Board on December 18, 2018, aims to increase availability of improved technologies in the country's horticulture subsector through the establishment of a Region Center of Excellence. The project's focus on improved technologies, such as biofortified horticultural seeds, would complement SADP-II by contributing to promoting better nutritional outcomes, especially among children where stunting is among the highest in the region.

77. The World Bank is in a unique position to bring its regional and global experiences in climate smart agriculture to bear and provide well-tested, low-cost solutions to building a climate-resilient agricultural sector, improving agricultural productivity, promoting improved dietary habits to decrease both malnutrition and obesity, creating jobs, improving rural incomes and incentivizing the participation of women and youth in the agricultural sector. Also, given its strong convening power, it can facilitate the participation of the best development practitioners in the preparation and

implementation of projects as well as organize study visits for potential project beneficiaries (local and national stakeholders) to relevant centers of excellence.

78. *Role of Partners*. Several donors are assisting GoL in its efforts towards building a climate resilient and competitive agricultural sector. These include, *inter alia*, the World Food Program (WFP), Food and Agriculture Organization (FAO) and International Food and Agriculture Development (IFAD). The WFP is currently preparing its country strategy 2019-2024 and the project will explore complementarities and synergies during implementation. It is currently working with farmers under the "Purchase for Progress" program whereby WFP procures 10 percent of maize and beans production from project-supported farmers in four districts (Berea, Leribe, Buthe-Buthe and Maseru) for school feeding programs. FAO is also in the process of developing a country Strategy and Investment Plan. Currently, the organization is developing a soil information system and land cover maps both of which would inform investments under SADP-II.

79. The activities of IFAD are of particular relevance to SADP-II. Currently, IFAD is co-financing the ongoing SADP. Additionally, IFAD is supporting the Lesotho Adaptation for Smallholder Agriculture Project (LASAP) and the Wool and Mohair Promotion Project (WAMPP). LASAP aims to mainstream environmental considerations in Lesotho's agriculture and the WAMPP has been designed to, *inter alia*, improve rangeland management. IFAD is currently preparing the Lesotho Integrated Catchment Management Project which aims to address the challenges of land erosion and degradation in select sub-catchments. This will be partly funded through the Global Environmental Facility (GEF) and implemented in partnership with FAO. These IFAD-supported activities are critical for addressing the challenges faced by Lesotho's smallholder farmers and will collectively contribute to helping Lesotho's agriculture sector meet its productive potential.

80. IFAD has expressed interest in co-financing the SADP-II in an amount of approximately US$5.0 million equivalent. The proposed project has been designed and prepared in full partnership with IFAD. IFAD funds will contribute to scaling up the reach and impacts of the proposed project by enabling a larger number of beneficiaries to be brought within the fold of the project and enhancing GoL's capacity for implementing the agreed activities. Once IFAD funds become available, the project will process an Additional Financing to include these funds. Subsequently, the World Bank and IFAD will undertake joint implementation support missions on a bi-annual basis to provide support and guidance to GoL for effective execution of the project.

81. **Maximizing Finance for Development (MFD)**. The project design and activities support important elements of Maximizing Finance for Development (MFD) in Lesotho's agriculture. By improving producers' knowledge and skills in improved and climate-smart growing techniques and technologies, finance, and access to markets as well as enhancing off-takers' access to consistent, reliable and quality produce, the project will contribute to making farming operations profitable, both for producers and agri-businesses. Project interventions will thus encourage private sector investment from value chain actors – farmers, input suppliers, agri-enterprises, as well as other financiers such as IFAD who have already expressed interest in co-financing the project. Improving linkages among smallholders and agri-enterprises is a well-tested and successful model to increase productivity, decrease cost of production, improve market integration and enhance incomes of smallholder farmers as well as lowered cost of doing business and improved revenue growth for participating agri-enterprises. These linkages also contribute significantly to job creation and the establishment of lasting commercial relationships beyond the life of the project. In this scenario, commercial banks would also be less risk averse to lending in agriculture. With an increased private sector space, GoL's scarce public sector resources could be freed up to be utilized for public goods such as basic and applied research, extension services which is critical for knowledge sharing and uptake of modern technologies among the farming population, rural public infrastructure, such as feeder roads, electrification and irrigation infrastructure rehabilitation all of which are important for increasing productivity and commercialization.

F. Lessons Learned and Reflected in the Project Design

82. The design of SADP-II has been informed by lessons learned from implementation of the ongoing SADP as well as global and regional climate-smart agricultural projects:

- *For sustainable agricultural commercialization, it is important to target smallholder farmers who have good potential to become commercially active.* These are the farmers residing in areas of high productivity-potential with capacity to access finance and technologies for viable, sustainable project-supported investments.
- *There is a continued need to build the capacity of extension staff* to understand new technologies and promote their adoption, including CSA and modern agronomic practices. This is critical for project sustainability so that the trained trainers can provide continuous training to farmers and processors after project-supported service providers have completed their contracts.
- *Many Producer Organizations formed under the ongoing SADP were unsustainable and failed. In some cases, this was due to an inadequate capacity to resolve the inevitable tensions and conflicts that occur in group activity. Other groups failed because there were inadequate financial incentives on which to build a sustained commitment to group activity.* The proposed project will address the first issue by hiring a private firm (e.g. experienced NGO) to guide the formation of farmer organizations, including adequate training on conflict resolution. This firm will also review the commercial incentives for group activity and screen out or modify the structure of groups where the returns to investment or group action per member are too small to maintain group cohesion. Given the many problems associated with the producer groups established under the ongoing SADP, the project will emphasize training and grant support to individual farmers where their objective is to raise on-farm agricultural productivity. Group support will prioritize groups involved in off-farm VC related activities such as marketing, assembly, input supply etc.
- *Experiences with irrigation in numerous World Bank-financed projects provide evidence of best practices for increasing smallholders' productivity and strengthening institutional capacity for long-term irrigation development.* One such practice, which the proposed project will take care to implement, is the development and strengthening of Water User Association (WUAs). Another lesson is that efforts to strengthen smallholders' productivity need to consider the key challenges of effective capacity in producer organizations, limited extension and input supply services, and poor access to reliable markets. A coherent and coordinated approach is needed to tackle these challenges—not isolated, piecemeal interventions.
- *Low-cost, easy-to-implement and scalable climate smart and other agricultural technologies are key for widespread farmer adoption.* Farmers recognize their vulnerability to Lesotho's extreme weather variability and the need to adapt their management systems, particularly since the severe drought of 2015-2016. However, reducing exposure to risk is not the only factor that motivates technology adoption. The up-front cost of the technology, its impact on labor requirements, how easy it is to obtain and use, and its impact on profitability are also critical. The project will work with scientists, extension agents and farmer groups to identify low-cost, effective and scalable climate smart and other agricultural technologies for sustainable uptake.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

83. **Project oversight.** The project will be implemented under the direct oversight of the Principal Secretary MAFS. The Project Management Committee (PMC) that was established under the ongoing SADP will be maintained given the

multi-sectoral nature of project interventions. The PMC will include representatives from several ministries such as Ministry of Finance (MoF), Ministry of Development Planning (MoDP), MAFS, Ministry of Forestry and Land Reclamation (MFLR), Ministry of Trade & Industry, Cooperatives and Marketing (MTICM), Ministry of Environment and Tourism (MoET), Ministry of Local Government and Chieftainship (MLGC). The PMC, which is an extension of the Technical Working Group formed during project preparation of the ongoing SADP will review all project reports and Annual Work Plans and Budgets (AWPB). The PMC will meet quarterly with the Project Manager acting as the Secretary to the PMC.

84. **Project Implementation**. The existing Project Management Unit (PMU) within MAFS will be responsible for project implementation including fiduciary aspects (including audits); knowledge management/communication (including public awareness campaigns); grievance redress mechanism; citizen engagement; and monitoring the implementation of safeguard related measures. It will finance PMU staff related costs (training etc.), goods, equipment and vehicles, incremental operating costs, assessments/analyses/ studies for preparation of future projects/operations, and other eligible expenses associated with overall project implementation. Support will also be provided for social/results/impact surveys at project mid-term as well as project completion. Additional periodic surveys will be supported to improve project implementation, for example to assess and improve women and youth participation. The monitoring and evaluation (M&E) system will be strengthened to improve the efficiency of data collection, analysis, evaluation and reporting.

85. **Project Implementation Manual (PIM).** The PIM of the ongoing SADP has been updated to guide implementation of SADP-II. The Matching Grant Program (MGP) manual as well as the CERC manual are appendices to the PIM. The finalization of these appendices, in a manner satisfactory to the World Bank, are conditions of project disbursement.

B. Results Monitoring and Evaluation Arrangements

86. The project will support the PMU to develop and implement a strong M&E system and framework to monitor progress toward the PDO and intermediate indicators. A full-time M&E Specialist will lead the results measurement exercises, with guidance from the World Bank team. The PDO indicators are designed to capture the incremental changes related to the project among its direct beneficiaries. Intermediate indicators will track periodic progress toward the PDO. The M&E system will focus explicitly on disaggregating results by gender and age (youth) for key performance indicators wherever possible. The Results Framework includes the complete list of indicators for Components 1 and 2, the frequency of data collection for each, and the entity responsible for collecting the data. The baseline data in the Results Framework will be indicated during project year 1. The impact assessment of the ongoing SADP, currently underway, will collect data to serve as baseline for the indicators in the results framework as applicable.

87. The M&E system will feature a Management Information System (MIS), spot checks, evaluations, and beneficiary assessments to gather accurate data on the indicators. The MIS will record all information related to project activities, including (a) basic information on producer organizations (b) details on business plans and productive partnerships, (c) sub-project information (such as physical and financial progress), (d) the financial management data from which Statements of Expenditure (SOE) will be provided to the World Bank, and (e) project management information for the semi-annual progress reports.

88. The updated PIM details the organizational and technical setup that will govern the project's M&E procedures. A mid-term evaluation will be conducted halfway into the project implementation period, and an implementation completion report will be prepared after the closing date.

89. For monitoring safeguard issues, an experienced and reputable Environmental and Social Consulting firm will be hired to carry out comprehensive and thorough environmental and social assessments to guide the designs of the irrigation systems, monitoring water use, etc.

90. The project will ensure that gender considerations and citizen engagement are fully integrated and that local beneficiaries also take part in the midterm and final project evaluations. To monitor gender impacts, the project will track the participation of men and women, as well as the extent to which each group benefits from project-supported activities. The project results framework includes gender indicators to ensure that gender impacts are monitored during implementation. Women will be supported to take advantage of project-generated opportunities, to mitigate the risk of women being crowded out by men as activities become more profitable, or when larger operators with more capital enter local markets. To this end, focused awareness campaigns will be organized to encourage women's participation in all project components.

C. Sustainability

91. The proposed project will build ownership and institutional capacity in key areas of project activity as the basis for ensuring the sustainability of project investments. Training farmers to think and act independently is the foundation of the SHEP approach that will be used to support individual farmers; and support for farmer groups will emphasize training in group dynamics, group management and conflict resolution as the basis for sustainable group activity. Support for investment will be based on a rigorous screening of grant applications to ensure that they are based on a sound business plan, and investors will be required to make a 20 percent – 40 percent equity contribution to the investments to demonstrate their commitment to the investment, their willingness to assume a significant share of the investment risks and their ownership of the investment. Both farmers and agri-business enterprises supported will also benefit from wide-ranging training programs in business management and technical issues related to the investment to improve their success. Agri-business enterprises involved in project supported VCs will further benefit from on-going mentoring and business coaching to facilitate progress in the more difficult, early stages of business expansion. It is expected that a continued and sustained handholding approach will further cement core business values of beneficiary participants necessary for their sustainability beyond the project's duration.

92. The capacity of public institutions to continue support for farmers and agri-business enterprises following project completion will be strengthened through project support for: further training of extension agents, a strong emphasis on the "training of trainers," and the use of national organizations as service providers wherever feasible. Further, similar capacity building efforts of area technical nutrition officers coupled with grassroots support to existing and established community nutrition clubs will ensure a more localized approach to influencing behavioral change that is more acceptable and therefore, sustainable over the longer term. Project measures to strengthen the public institutional infrastructure for irrigation and water use management (including water user groups), information dissemination, analysis of the impact of climate change, and soil and land use management are also key elements of project design.

93. **Environmental sustainability.** Activities under the proposed project will be screened against an Environmental and Social Management Framework (ESMF) to ensure that interventions are environmentally sustainable. The strong focus on dissemination and adoption of CSA practices will also contribute positively to environmental sustainability, especially with regard to addressing threats from climate change. In addition, the country wide geographic coverage of disseminated CSA packages and practices will have a significant demonstration effect crowding in additional players and resources to the sector.

94. **Gender.** Women play a major role in agriculture in Lesotho, both traditionally and due to the migration of men to work in South Africa. Traditionally, women in Lesotho are only involved in the production of staple food for household consumption and their production capacity is limited by lack of technical skills, poor access to productive resources and their high overall workload (including household work). However, because of migration, many farmer groups, extension groups, self-help groups and savings and credit groups are now dominated by women. Through this project, women will benefit from access to finance to obtain high-quality inputs and training to improve agronomic practices, including climate smart agricultural practices for growing and processing diverse nutritious foods which will not only create opportunities for women to increase production, processing and sales but also improve household level dietary diversity and nutrition.

95. To monitor gender impacts, the project will track the participation of men and women, as well as the extent to which each group benefits from project-supported activities. The project results framework includes gender indicators to ensure that gender impacts are monitored during implementation. Women will be supported to take advantage of project-generated opportunities, to mitigate the risk of women being crowded out by men as activities become more profitable, or when larger operators with more capital enter local markets. To this end, focused awareness campaigns will be organized to encourage women's participation in all project components.

96. *Gender-Based Violence*. Lessons learned from the implementation of projects in Africa and recommendations identified in the Global Gender-Based Violence Task Force Report[8] are embedded in project design. While recognizing that addressing gender-based violence (GBV) and sexual exploitation and abuse risks are highly complex matters and can never be fully eliminated, project design includes actions as necessary to pre-empt such risks. Actions include: enhanced up-front risk assessment, better defined contractor and consultant obligations, adopting a mandatory workers' Code of Conduct with stringent compliance requirement, and a robust mechanism to ensure feedback from citizens and actors. These actions also apply to contracts for irrigation works.

97. **Job Creation and Opportunities for Youth.** The project will offer the country's youth opportunities for gainful employment. The project will offer un- and underemployed young rural people an opportunity for livelihood through self- and wage-employment in the promoted value chains. Support to agri-enterprises will pay special attention to activities along the value chain with the most potential for fast growth and job creation for women and youth entrepreneurs. Both the horizontal alliance trainings and the matching grant windows have a youth target that is higher than their respective share of the rural population. This is expected to encourage and ensure their participation.

98. **Climate Co-benefits.** The project will significantly contribute to climate co-benefits by promoting a range of agricultural technologies and agronomic practices that:

- Enhance the adaptation capacity of farming systems in the project area. This is achieved through: (i) the development and rehabilitation of micro-irrigation systems and for enhanced water-use efficiency, (ii) the adoption of climate-resilient (drought, heat and pest tolerant) crop varieties by farmers, (iii) crop diversification for increased production of higher value and nutrient rich- horticulture products, and (iv) climate-smart practices that improve soil health, reduce land degradation and improves *in-situ* water conservation.

[8] Gupta, Geeta Rao, Sierra Katherine. 2017. Working Together to Prevent Sexual Exploitation and Abuse: Recommendations for World Bank Investment Projects (English), Washington, DC, World Bank Group.

- Mitigate Greenhouse Gas (GHG) emissions through carbon sequestration by (i) planting trees within croplands (agroforestry systems), (ii)promoting regeneration of vegetation; (iii) rehabilitation of grasslands (iv) growing fruit trees, (v) incorporating crop residues (biomass) into the soil, and (vi) adopting conservation agriculture.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis (if applicable)

99. **Technical Analysis.** The project addresses important challenges faced by smallholder farmers by using a simple productive alliance approach for improving productivity, developing market linkages and improving economic relationships of farmers with viable off-takers. Through implementation of this project, a substantial portion of small-scale producers are expected to enter commercial production and become integral actors in competitive value chains. Through support to off-takers, the project will help to leverage private investment in the agricultural sector which is key to commercialization and its associated benefits of import substitution and increased exports. Building a climate smart agriculture sector underpins the design of each of the proposed project interventions.

Economic Analysis and Financial Analysis.

100. **Economic and Financial Analysis.** A series of crop and farm budgets were developed for without-project and with-project scenarios. The social discount rate is assumed at 6.14 percent. An investment horizon of 15 years is used in the analysis. Incremental benefits mainly result from horticultural crops value chain development. The project's economic rate of return (ERR) is estimated at 25.1 percent, with a corresponding economic net present value (ENPV) of US$69.0 million. An analysis was also conducted incorporating the social value of carbon. Based on a net balance of 58,196 tCO2-eq per year as well as a social value of carbon starting at US$40 (low value) and US$80 (high value) in 2020, the project's ENPV that includes benefits from value of carbon reduction is estimated at US$89.2 million (at low value of carbon) and US$109.3 million (at high value of carbon). Results show that the return on the project's investment would remain above the social discount rate. Furthermore, sensitivity analysis for key variables demonstrates the robustness of the economic results. The ENPV is positive for all proposed changes.

101. A standard cost-benefit analysis has been used to assess overall project benefits during preparation of the project. The project outcomes will also be evaluated quantitatively and qualitatively based on analysis and comparison of pre- and post- project surveys and independent assessment implemented in areas with and without project intervention. The selection of commodities and value chains for project support is based on existing value chains analysis and complementary analysis, as needed, during project preparation. Indicators such as crop yields and crop production or the area of arable land improved will also be monitored by the project on an annual basis; followed by a final, empirical analysis of their impact as part of the project Implementation Completion and Results Report (ICR). Details of the Economic and Financial Analysis can be found in Annex 3. Annex 4 provides the detailed greenhouse gas (GHG) calculations for the project.

B. Fiduciary

Financial Management

102. The PMU within MAFS will be accountable for the project financial management arrangements, (including budgeting, accounting, payments, internal controls, transaction processing, quarterly and annual financial reporting).

This responsibility will be entrusted to the Financial Accountant of the PMU. There is a need for further strengthening of this unit by an additional accountant to absorb this project. The audit report for the ongoing project under the PMU has indicated accountability issues whereby subproject funds under the competitive grant program were not used for intended purposes by the beneficiaries. This created a need for strengthening monitoring and evaluation and active oversight on the use of funds for the new project.

103. Budgets will be prepared based on approved work plans and procurements plans. In accordance with the World Bank's financial reporting requirements, the project will be required to prepare and submit to the World Bank Unaudited Interim Financial Reports not later than 45 days after the end of each financial quarter.

104. Disbursements under the project will be done in accordance with the rules and procedures as set out in the World Bank's disbursement handbook. The project will open a segregated Designated Account, denominated in United States Dollars at the Central Bank of Lesotho to receive funds from the World Bank. Due to the accountability issues that emerged from project funds not used for intended purposes by some grant beneficiaries under the ongoing SADP, the project will continue to disburse against Statement of Expenditures (SOEs) until the internal control environment improves. The Direct Payment option is also available under SADP-II. Details for various disbursement methods are spelt in the World Bank's disbursement handbook.

105. The annual project financial statements, including the auditor's opinion and a management letter, will be submitted to the World Bank not later than six (6) months after the end of the fiscal year. The annual audit will be carried out by the Office of the Auditor General of Lesotho.

106. The overall conclusion of the financial management assessment is that the project's financial management has an overall risk-rating of "Substantial " due to the ongoing accountability issues of the ongoing project although the financial management arrangements satisfy the World Bank's minimum requirements under the World Bank Policy and Directive on Investment Project Financing.

Procurement

107. All procurement to be financed under the project will be carried out in accordance with the World Bank Procurement Regulations for IPF Borrowers (dated July 2016), revised November 2017 and August 2018, and the provisions stipulated in the Legal Agreement. Project procurement will be carried out by the existing PMU which is currently supporting implementation of the Smallholder Agricultural Development Project. The PMU in place includes an experienced Procurement Officer with previous experience in the World Bank's Procurement and Consultant Selection policies, guidelines and procedures, Procurement Regulations and the Systematic Tracking of Exchanges in Procurement (STEP) system.

108. An assessment of the current PMU has identified the following key issues: (a) lack of adherence to Procurement Plan time lines, especially delays in evaluation of bids/proposals, may lead to implementation delays; (b) limited frequency of fields visits to project sites may lead to slow identification and resolution of contractual matters, and (c) given the likely increase in the volume of procurement activities when this project becomes effective and the need to advance procurements very quickly in order to fast track project implementation the PMU requires strengthening of their procurement and contract management capacities with an additional qualified procurement officer. The procurement risk rating is 'Moderate'.

109. Preliminary risk mitigation measures based on the discussion and preliminary assessment include (a) hiring an additional procurement officer, (b) putting in place a contract management plan for major contracts, and (c) training new and current staff in the World Bank Procurement Regulations and contract management.

110. A Project Procurement Strategy for Development (PPSD) has been developed to determine the approach to market, the selection methods, evaluation options, and sustainability considerations that may need to be included. The PPSD will consider this and other factors in determining the Procurement Plan, especially the packaging. The project will carry out implementation in accordance with the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD and IDA and Grants', dated July 1, 2016 (the Anticorruption Guidelines).

111. The implementing agencies have prepared an acceptable Procurement Plan. The Plan will be uploaded into the new Systematic Tracking of Exchanges in Procurement (STEP) system, a planning and tracking system that will provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance. The Procurement Plan includes: (a) a brief description of the activities/contracts to be procured during the first 18 months of project implementation, (b) the approach to market and selection methods to be applied, (c) the cost estimates, (d) time schedules, and (e) the World Bank's review requirements. Procurement arrangements for the CERC will be described in the CERC Manual.

112. **Contract Management.** High-risk and high-value procurements will be identified for increased contract management support and indicated in the updated Procurement Plans during the life of the project. The PMU will develop key performance indicators (KPIs) for such identified contracts and the KPIs will be monitored during the actual execution of contracts. The World Bank team will provide additional due diligence and independent review of the contract performance of such identified procurements. The PMU will be responsible for overall project/contract management.

113. The Lesotho Procurement Regulations of 2007 revised 2018 have been assessed and indicate that the country's regulations are generally consistent with international best practice, although some weaknesses were identified, which should be mitigated through adequate measures to ensure that (a) there is adequate advertising in national media; (b) procurement is generally open to eligible firms from any country; (c) contract documents have an appropriate allocation of responsibilities, risks, and liabilities; (d) contract award is published; (e) the national regulations do not preclude the World Bank from its rights to review procurement documentation and activities under the financing; (f) an effective complaints review mechanism is implemented; and (g) records of the procurement process are maintained.

114. The bids/request for proposals document shall require that bidders/proposers submitting bids/proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, the World Bank's Anticorruption Guidelines, including without limitation, the World Bank's right to sanction and the World Bank's inspection and audit rights.

115. With the incorporation of the above mentioned provisions, the Lesotho Procurement Regulations will be acceptable to be used under those procurements using the open national approach not subject to the World Bank's prior review as agreed with the World Bank in the approved Procurement Plan.

116. **Procurement of works.** This includes procurement of water intake, water treatment, transmission mains, and reservoirs and pumping stations, and rehabilitation of sewerage infrastructure. It is not envisaged that there would be any large works packages to be procured through an open international approach to the market.

117. **Procurement of goods.** Goods to be procured under this project will include farm implements and office requisites.

118. Procurements while approaching the international market will be done using the World Bank's standard procurement documents. Procurements while approaching the national market will be done using the national standard bidding documents, subject to incorporation of the abovementioned provisions, with an additional annex to address the World Bank's Anticorruption Guidelines and ensure universal eligibility.

119. **Procurement of consultancy services.** Consulting services to be procured under the project include hiring of firms to carry out studies, assessments, designs, and supervision of works and related activities. Hiring of individual consultants will be limited to any international consultant(s) required for project implementation.

120. **Operating costs.** These items will be procured using the borrower's national procurement and administrative procedures acceptable to the World Bank, including selection of project implementation support personnel.

121. **Record keeping.** All records pertaining to award of bids, including bid notification, register pertaining to sale and receipt of bids, bid opening minutes, bid evaluation reports and all correspondence pertaining to bid evaluation, communication sent to/with the World Bank in the process, bid securities, and approval of invitation/evaluation of bids would be retained by the respective departments and also uploaded in STEP.

122. **Disclosure of procurement information.** The following documents shall be disclosed: (a) a Procurement Plan and updates; (b) an invitation for bids for goods and works for all contracts; (c) request for expression of interest for selection/hiring of consulting services; (d) contract awards of goods, works, and non-consulting and consulting services; (e) a monthly financial and physical progress report of all contracts; and (f) an action taken on the complaints received on a quarterly basis.

123. The following details shall also be published on the United Nations Development Business online and the World Bank's external website: (a) an invitation for bids for procurement of goods and works following open international market approaches, (b) request for expression of interest for selection of consulting services following open international market approaches, and (c) contract award details of all procurement of goods and works and selection of consultants using open international market approaches.

124. **Fiduciary oversight by the World Bank.** The World Bank shall prior review contracts according to the prior review thresholds set in the PPSD/Procurement Plan. All contracts not covered under prior review by the World Bank will be subject to post review during implementation support missions, including missions by consultants hired by the World Bank or through supreme audit institutions as part of the financial audit. The World Bank may, at any time, conduct independent procurement reviews of all the contracts financed under the credit.

C. Safeguards

Environmental Safeguards

125. The Project is rated Environmental Assessment Category B as the proposed activities and sub-projects are small-scale and site-specific with minimal environmental footprint. In addition, the anticipated environmental and social impacts are moderate and easily manageable through the implementation of applicable mitigation measures that will be reflected in subproject-specific safeguard instruments provided for in the Environmental and Social Management Framework (ESMF).

126. More specifically, the project triggers OP/BP 4.01 Environmental Assessment, mainly due the proposed activities under Components 1 and 2 which are likely to result in some environmental and social impacts that will need due safeguards attention. These activities will largely involve minor civil works related to construction and rehabilitation of irrigation infrastructure, processing and storage facilities. Some of the potential adverse environmental and social impacts resulting from these activities may lead to soil erosion and degradation, decreased water quality, loss of vegetation, fauna disturbance, dust emission and health and safety issues during construction.

127. To ensure compliance with the safeguard policies, the GoL has prepared an ESMF and IPMP. Since details of subprojects and the exact implementation sites for subprojects to be supported under the project are yet to be determined and finalized, an ESMF was prepared. Potential environmental impacts of subprojects selected for support were identified during the ESMF preparation. The ESMF contains methods and procedures for screening and monitoring the implementation of mitigation measures. In addition, the ESMF will be used for guidance in the preparation of appropriate subproject-specific mitigation and management plans including project specific Environmental and Social Management Plans (ESMPs) during project implementation to ensure adequate monitoring and reporting of the safeguard requirements. The ESMF and IPMP were consulted upon and disclosed on April 10, 2019.

Social Safeguards

128. The project is expected to have significant positive effects on rural households, especially those engaged in smallholder farming, and more specifically on the women and children in these households who disproportionately bear the burden of food insecurity and nutritional deficiency. Due to the nature of the project activities, physical displacement or permanent relocation are not anticipated. Instead, the project is expected to deliver significant social and environmental benefits to many Basotho whose main livelihoods depend mainly on crop and livestock farming. Generally, activities under this project will promote adaptive capacity and resilience of smallholder farmers to climate on variability and extreme climatic events, improve productivity and improve household income. Though the proposed activities do not anticipate to physically displace people, the proposed activities may require restriction of access to productive natural resources, and/or loss of incomes and livelihoods because the historic communal land tenure system allows for communal grazing of crop residues on field after harvesting. Activities under Components 1 and 2, including *inter alia*, climate-smart agricultural practices and integrated soil fertility management, construction of a fertilizer blending plant, processing and storage facilities, construction and rehabilitation of irrigation infrastructure, construction of small, lined reservoirs downstream may require land acquisition and restricted access to natural resources (e.g. pastures). Therefore, Involuntary Resettlement (OP/BP 4.12) policy is triggered to address the potential negative impacts.

129. To ensure that adequate mitigation measures are in place, the GoL has prepared a Resettlement Policy Framework (RPF) to guide the preparation of site-specific Resettlement Action Plans (RAPs) once the exact location of sub-projects is identified. The RPF was fully consulted upon, reviewed, and cleared by the World Bank, and publicly disclosed on April 10, 2019. Construction works will not commence until any required land acquisition, restricted access to resources or compensation requirements have been completed.

Other Safeguards

130. The project triggers the following additional safeguards policies:

- Natural Habitats (OP 4.04) because of the likely impacts on natural habitats such as rivers. Anticipated impacts include reduction in natural river flow and discharge of polluted return flows from the proposed irrigation schemes;
- Physical Cultural Resources (OP 4.11) because the associated civil works may impact on un-known physical cultural resources. If the Policy is triggered, the ESMF include Chance Finds Procedures for physical cultural resources.
- Pest Management (OP 4.09) because the Project may employ the use of agro-chemicals such as pesticides to enhance agricultural productivity, albeit on a small scale. An Integrated Pest Management Plan (IPMP) to provide guidance on the sustainable application of pesticides is being prepared.
- OP 7.50 on Projects on International Waterways is triggered because the project will support the rehabilitation of existing as well as expansion of irrigation schemes identified by the National Irrigation Master Plan as most rivers in Lesotho are categorized as international waterways. For rehabilitation of existing infrastructure, the memorandum for an exception to notification under OP 7.50 was approved by the regional Vice President of the World Bank on April 26, 2019. The memorandum also indicated that no project funds will be utilized for expansion of irrigation schemes unless GoL has processed the riparian notification requirement under OP7.50 in a manner satisfactory to the World Bank.
- Safety of Dams (OP4.37) is triggered as a precautionary measure due to proposed investments in the construction and rehabilitation of irrigation systems and small water storage. An exclusion clause has been included in the ESMF indicating that the project would not support activities that are high risk and entail new investments in large dams which would trigger OP 4.37. In addition, site-specific Environmental and Social Management Plans (ESMPs) will be prepared for any new infrastructure. The ESMPs will be contractually binding to the contractors and ensure that safeguards requirements and specifications are complied with during Project implementation.
- Forests (OP 4.36) is not triggered since the project is not expected to support sub-projects located in forested areas and plantations. The ESMF will include screening criteria for any potential impacts on forested areas and the subprojects in forested areas will not be eligible under the project. Projects in Disputed Areas (OP 7.60) policy is not triggered since the project will not be located in any disputed areas.

Citizen Engagement

131. The preparation and design of the proposed project benefited from broad citizen engagement, including with a number of farmers, processors, the National Farmers' Union of Lesotho. To ensure continued citizen engagement in the project, a full-time communications specialist will be hired upon project effectiveness and a comprehensive communications strategy will be developed and implemented throughout the project to ensure proper coordination, dissemination, and stakeholder feedback. The project will include a citizen engagement review mechanism, conducted by the PMU. This will include consultations and surveys that measure the level of satisfaction of the project beneficiaries for support received under the project. It will also ensure that feedback from beneficiaries is fed back into the implementation process going forward so as to improve delivery of project services, i.e. closing the feedback loop. Additionally, the existing grievance redress mechanism (GRM) under SADP will be re-assessed and strengthened to

ensure that all project-related complaints at local and national level are addressed/resolved within an agreed specified time.

Grievance Redress Mechanisms

132. Communities and individuals who believe that they are adversely affected by a World Bank 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 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, because 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/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

V. KEY RISKS

133. The overall risk rating of the project is Substantial. The main risks are summarized in Table 4 below.

Table 4. Key Risks Identified for Proposed Project

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for implementation and sustainability	Substantial
6. Fiduciary	Substantial
7. Environmental and Social	Substantial
8. Stakeholders	Moderate
9. Overall	Substantial

134. **Macroeconomic.** The macroeconomic risk is assessed as Substantial. Lesotho's economy faces major challenges over the next 2-3 years with slower growth and a rising public deficit because of falling SACU customs revenues. The government has used its reserves to finance the deficit so far but will eventually have to adjust by reducing its high public wage bill – a difficult challenge given Lesotho's continued political fragility. These macro-economic trends will also make it difficult to reduce poverty, income equality and unemployment. The proposed project will help to offset these trends to some measure by boosting agriculture sector growth, raising rural incomes and creating employment.

135. **Political and Governance.** The political and Governance risk is assessed as Substantial. While MAFS will remain as the key implementing agency of the project as under the ongoing SADP, there are overlapping responsibilities with various ministries, particularly at the district level, with the consequent risk that staff of these other Ministries will not

be fully engaged in project activities. There is also a risk of elite capture and/or patronage in the award of grants under the project. To mitigate this risk, the grant program will be governed by a detailed Grant Manual which will clearly delineate responsibilities, selection criteria, awarding procedures, etc. To ensure transparency and address the risk of elite capture, details of all grants awarded will be published on the project website: name of recipient, amount, type of investment supported, start and completion date, etcetera. The complaint handling mechanism under SADP will be strengthened to ensure timely and effective response to stakeholder concerns.

136. **Implementation Capacity.** The implementation capacity risk is assessed as Substantial. There is limited overall implementation capacity in the country—both within government and the private sector. While SADP has improved the knowledge and skills of project-related entities, gaps remain, which may affect the pace and quality of implementation of this project too. Issues stemming from poor inter-ministerial collaboration and lack of coordination at central and district levels led to delays in the implementation of SADP. To mitigate this risk, project design has incorporated the following measures: (a) continuous training and capacity building of participating government entities; (b) retention of the SADP PMU with additional technical and administrative staff and regular training to upgrade skills and knowledge; (c) retaining the PMU within MAFS in order to continue strengthening the skills of senior government officers; and (d) continuous inclusion of performance-based elements in contracts, agreements and memoranda of understanding.

137. **Environmental and Social (including Safeguards).** The environmental and social risks are assessed as Substantial. Over the course of implementing SADP, the PMU demonstrated weak institutional capacity on managing and monitoring environmental risks and impacts generated from implementing the project activities. The PMU does not have a dedicated qualified and experienced Environmental Specialist with an overall environmental safeguards coordination role to screen, prepare, implement, monitor and report on safeguard requirements in line with the World Bank Safeguard Policies. To offset this risk, the capacity of the PMU will be enhanced with the hiring of a full-time safeguard specialist. An experienced and reputable Environmental and Social Consulting firm will also be hired to ensure compliance with all safeguards policies applicable to the project during implementation. Periodic training will be provided to ensure up-to-date knowledge of the World Bank's safeguard policies and requirements.

138. **Fiduciary.** The overall fiduciary risks are assessed as Substantial. This rating is due to capacity constraints within the PMU related to Financial Management (FM) issues in the context of the accounting information system used to prepare project accounts and limited experience with World Bank procedures. To enhance FM capacity, an assistant Project Accountant with appropriate experience and qualifications will be recruited to work within the PMU.

139. The current procurement performance rating of the existing PMU is Satisfactory, and the risk rating is Moderate. All procurement to be financed under SADP-II will be carried out in accordance with the Procurement Regulations for IPF Borrowers, July 2016 (revised November 2017 and August 2018) and other provisions stipulated in the Legal Agreement. The project will implement procurement in accordance with the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD and IDA and Grants', dated July 1, 2016 (the Anticorruption Guidelines). As under the ongoing SADP, procurement will be covered by the procurement officer in the existing PMU who has experience under the World Bank Guidelines for Selection and Employment of Consultants and the Procurement Guidelines, and Procurement Regulations for IPF Borrowers, including preparation of PPSD. The World Bank team will also provide hands-on implementation support and training.

140. **Size of local market and competition from South Africa**. The risk of competition from South Africa is assessed as Moderate. Efforts by Lesotho farmers to expand their commercial activities could be constrained by the small size of the local market for agricultural produce and the widespread availability of high quality, low cost produce/products imported from South Africa. Measures to mitigate this risk include: (a) support and training to commercially oriented

farmers and farmers groups to help them gear production to market demands; (b) the continuation of a grants program to offset the limited access to finance to help create market opportunities for local production; (c) attracting investments from South Africa to enhance production and commercialization and exploit the potential of South Africa's markets; and (d) rigorous screening of the business plans submitted for Matching Grants.

VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Lesotho

Smallholder Agriculture Development Project - II

Project Development Objectives(s)

The development objective of the project is to support increased adoption of climate smart agricultural technologies in Lesotho's agriculture, enhanced commercialization and improved dietary diversity among targeted beneficiaries.

Project Development Objective Indicators

Indicator Name	DLI	Baseline	End Target
Support adoption of CSA technologies, enhance commercialization and improve dietary diversity			
Land area under sustainable landscape management practices (CRI, Hectare(Ha))		0.00	45,000.00
Farmers adopting climate smart agricultural technologies (Number)		0.00	70,000.00
Of which female (Number)		0.00	28,000.00
Household comercialization level in project areas (Percentage)		25.00	50.00
Household consumption of diversified food and food products (Percentage)		0.00	80.00

Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	End Target
Promoting Climate Smart Agricultural Practices and Advisory Services			
Client days of training provided on improved agricultural practices (Number)		0.00	187,500.00
Reduced net GHG emissions per unit of production for selected crops (Percentage)		0.00	15.00
Users receiving integrated agroweather information and market information services (Number)		0.00	305,000.00
Community-based irrigation water management entities operational (Number)		0.00	30.00
Area provided with new/improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	2,860.00
Area provided with new irrigation or drainage services (CRI, Hectare(Ha))		0.00	260.00
Area provided with improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	2,600.00
Key hydraulic installations, controls and structures installed or renovated (Number)		0.00	1,500.00
Fertilizer blending facility established (Yes/No)		No	Yes
State-of-the-art Soil Laboratory established (Yes/No)		No	Yes
Improving Agricultural Commercialization and Nutrition			
Rural producers engaged in partnerships / agreements, contracts with public or private entities (Number)		0.00	5,000.00
Women (Percentage)		0.00	50.00
Youth (Percentage)		0.00	25.00
Number of sub-projects completed in line with agreed contractual obligations (Number)		0.00	3,000.00

Indicator Name	DLI	Baseline	End Target
Women (Percentage)		0.00	50.00
Youth (Percentage)		0.00	25.00
Yields of selected agricultural commodities supported by the project (Percentage)		0.00	30.00
Beneficiaries receving grants for improving household nutrition (Number)		0.00	100.00
Households participating in nutrition clubs (Number)		0.00	10,000.00
Industry guidelines for sugar, salt, fat, fortification developed (Yes/No)		No	Yes
Household level knowledge of improved diets and nutrition (Percentage)		0.00	90.00
Number of full-time job equivalents created under the project (Number)		0.00	1,500.00
Satisfaction of project beneficiaries with services provided and survey results used to inform future project implementation (Citizen Engagement) (Percentage)		0.00	75.00
Complaints responded to and/or resolved within the stipulated standard for response times (GRM) (Percentage)		0.00	100.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Land area under sustainable landscape management practices	The indicator measures, in hectares, the land area for which new and/or improved	Annual	Progress reports and secondary	MIS/M&E	PMU, Lesotho Bureau of Statistics

	sustainable landscape management practices have been introduced. Land is the terrestrial biologically productive system comprising soil, vegetation, and the associated ecological and hydrological processes; Adoption refers to change of practice or change in the use of a technology promoted or introduced by the project; Sustainable landscape management (SLM) practices refers to a combination of at least two technologies and approaches to increase land quality and restore degraded lands for example, agronomic, vegetative, structural, and management measures that, applied as a combination, increase the connectivity between protected areas, forest land, rangeland, and agriculture land.		data		
Farmers adopting climate smart agricultural technologies	Project beneficiaries adopting at least one CSA technology demonstrated	Bi-annual	PMU Progress Reports	Project MIS/M&E in PMU	PMU

	under the project				
Of which female					
Household comercialization level in project areas	Value of produce and products sold as a percentage of total value of produce and products	Mid-term and end of project	Baseline and impact surveys; Project M&E records	Project surveys	PMU
Household consumption of diversified food and food products	This indicator will track the shift in diets from dominant cereal consumption to more nutritious foods such as fruits and vegetables as well as protein rich foods.	Annual	Project Progress Reports	Qualitative Surveys	PMU

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Client days of training provided on improved agricultural practices	This indicator will measure the number of days the project has provided training to potential project beneficiaries	Bi-annual	Project Progress Reports	MIS / M&E	PMU
Reduced net GHG emissions per unit of production for selected crops		Annual	PMU Reports	MIS/M&E	PMU
Users receiving integrated agroweather information and market information services	This indicator measures the number of farmers that will benefit from utilization of	Bi-annual	PMU Reports	Surveys	PMU

	the agro-weather tool and market information services				
Community-based irrigation water management entities operational	Farmers forming formal entities to mange on-farm level irrigation systems	Annual	Progress Reports	MIS/M&E	PMU
Area provided with new/improved irrigation or drainage services	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigation and drainage services, expressed in hectare (ha).	Annual	Progress Reports	MIS/M&E	PMU
Area provided with new irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World Bank.	Annual	Progress Reports	MIS/M&E	PMU
Area provided with improved irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World Bank.	Annual	PMU Reports	MIS/M&E	PMU
Key hydraulic installations, controls and structures installed or renovated	The indicator will measure the number of irrigation	Annual	Progress Reports	Surveys/Field Visits	PMU

	hydraulic structures improved for better performance				
Fertilizer blending facility established	The indicator will verify the setting up of the fertilizer blending facility so that farmers can benefit from the right blend of fertilizers for farm application	Annual	Progress Reports	Site visits	PMU
State-of-the-art Soil Laboratory established	The indicator will assess the establishment of the laboratory and its effective functioning	Annual	Progress Reports	Site visits	PMU
Rural producers engaged in partnerships / agreements, contracts with public or private entities	This indicator will measure the number of contracts between farmers and off-takers	Bi-annual	MIS/M&E	Surveys	PMU
Women					
Youth		Bi-annual			
Number of sub-projects completed in line with agreed contractual obligations	The indicator will assess the efficacy and success of the productive partnerships between farmers and off-takers	Bi-annual	MIS/M&E, Progress Reports	Surveys/Site visits	PMU
Women		B-annual			
Youth		Bi-annual			
Yields of selected agricultural commodities supported by the project	This indicator tracks the increase in productivity of	Annual	Progress Reports	MIS	PMU

	crops among farmers supported by the matching grant program.				
Beneficiaries receving grants for improving household nutrition	The indicator will track the number of grants awarded to beneficiaries for increased production and processing of nutritious foods	Annual	Progress Reports	Surveys	PMU
Households participating in nutrition clubs	The indicator will measure the number of households participating in nutrition clubs to increase knowledge of dietary diversity	Bi-annual	Project Progress Reports	Surveys/Site visits	PMU
Industry guidelines for sugar, salt, fat, fortification developed	The indictor will track the preparation of the industry guidelines for sugar, salt, fat, nutrient fortification for the benefit of agri-processors and enterprises	Quarterly	Progress Reports	Consultant report	PMU
Household level knowledge of improved diets and nutrition	The indicator will track the percentage of beneficiaries participating in training to increase knowledge on dietary diversity	Bi-annual			
Number of full-time job equivalents created under the project	This indicator will track the creation of full-time and part-time jobs, including seasonal.	Annual	Progress Reports	Surveys	PMU
Satisfaction of project beneficiaries with services provided and survey results used to inform future project implementation	The project will assess whether beneficiaries reached under the project	Bi-annual	Progress Reports	Beneficiary surveys, M&E	PMU

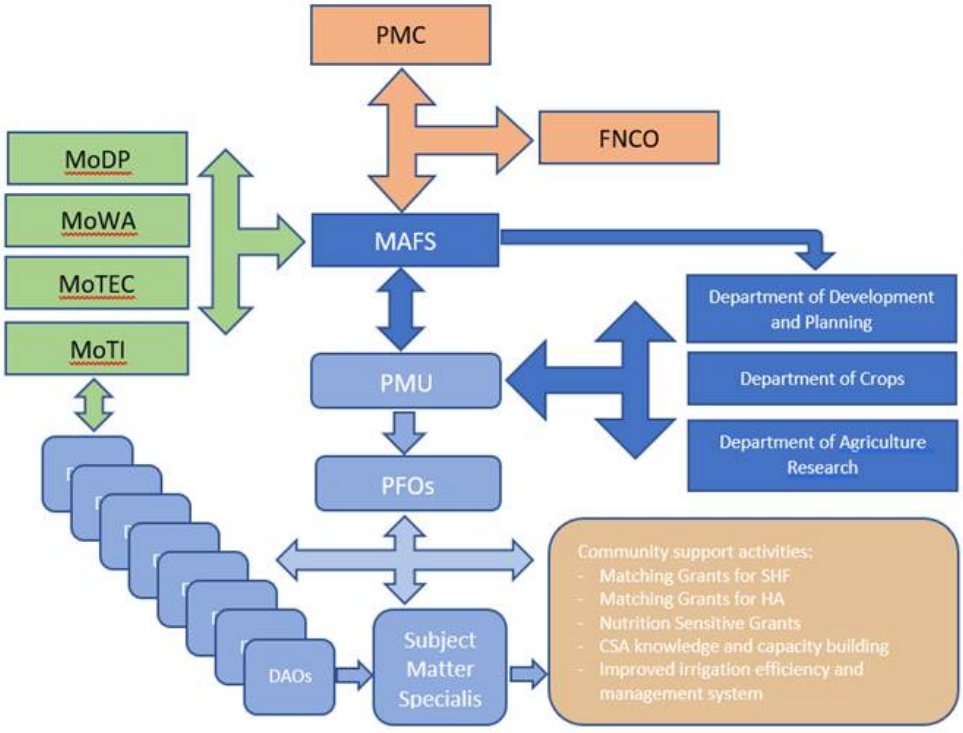
(Citizen Engagement)	are satisfied with the support provided. The results of the surveys will fed into the implementation process so as to improve delivery of services going forward.				
Complaints responded to and/or resolved within the stipulated standard for response times (GRM)	Complaints related to all activities of the project registered by the GRM and addressed on time.	Bi-annual	PMU Reports	MIS	PMU

ANNEX 1: Implementation Arrangements and Support Plan

1. **Project Management and Coordination**. The existing SADP Project Management Unit (PMU) within the Ministry of Agriculture and Food Security (MAFS) will be responsible for overall project implementation. This will include fiduciary aspects (including audits); knowledge management/communication (including public awareness campaigns); grievance redress mechanism; citizen engagement; and monitoring the implementation of safeguard related measures. It will finance PMU staff related costs (training etc.), goods, equipment and vehicles, incremental operating costs, assessments/analyses/studies for preparation of future projects/operations, and other eligible expenses associated with overall project implementation. Support will also be provided for social/results/impact surveys at project mid-term as well as project completion. Additional periodic surveys will be supported to improve project implementation, for example to assess and improve women and youth participation. The monitoring and evaluation (M&E) system will be strengthened to improve the efficiency of data collection, analysis, evaluation and reporting.

2. The capacity of the PMU will be enhanced by hiring the following additional technical and administrative staff: irrigation specialist; full-time environmental and social safeguards specialist; agri-business/value chain expert; institutional specialist (for farmer groups, CWOs etc.); two additional support persons for administration of the matching grants program; and an additional project accountant to enhance financial management (FM) capacity.

Figure 3. ORGANIZATIONAL CHART FOR IMPLEMENTATION ARRANGEMENTS



3. **Project oversight.** The project will be implemented under the direct oversight of the Principal Secretary, MAFS. A Project Management Committee (PMC) that was established under SADP will be maintained given the multi-sectoral nature of project interventions. The PMC includes representatives from several ministries such as Ministry of Finance

(MoF), Ministry of Development Planning (MoDP), Ministry of Agriculture and Food Security (MAFS), Ministry of Forestry and Land Reclamation (MFLR), Ministry of Trade & Industry, Cooperatives and Marketing (MTICM), Ministry of Environment and Tourism (MoET), Ministry of Local Government and Chieftainship (MLGC). The PMC, which is an extension of the Technical Working Group formed during project preparation of the ongoing SADP will review all project reports and Annual Work Plans and Budgets (AWPBs). The PMC will meet quarterly with the Project Manager who will serve as Secretary to the PMC.

4. A high-level Task Force was established by the Government in 2010 to broadly oversee the development of Lesotho's agricultural sector. The Task Force consists of Principal Secretaries of relevant ministries (MFDP, MAFS, MTICM, MLGC and MFLR). The composition of the Task Force will be enhanced under SADP-II to include representatives of the private sector as well as farmer representatives. The PMC would periodically report to the Task Force and flag issues that require high-level decision making.

Implementation Arrangements by Components

5. **Project Implementation Manual (PIM).** The PIM of the ongoing SADP has been updated to guide implementation of SADP-II. The Matching Grant Program (MGP) manual as well as the CERC manual are appendices to the PIM. The finalization of these appendices, in a manner satisfactory to the World Bank, are conditions of project disbursement.

6. **Component 1:** Overall responsibility for implementation of the component would rest with the PMU. The PMU will also hire a service provider to facilitate implementation of this component. Additionally, the Department of Agriculture Research (DAR) and relevant departments within the MoET will also be tasked with implementation of activities under this component.

7. Given the knowledge-intensive nature of many CSA technologies, technical service providers will be contracted to provide training and build capacity in the project communities. Such service providers could be nongovernmental organizations (NGOs), civil society organizations (CSOs), community-based organizations (CBOs), vocational training institutions, small and medium enterprises, or specialized agencies that upon demand could provide tailored trainings on CSA implementation. The selection criteria for service providers is elaborated in the PIM. A preliminary list of the criteria includes:

- Alignment of activities with project objectives;
- Geographic location of service providers and specialized areas of interest;
- Operational presence and track record of implementation in Lesotho or in the region;
- Technical capacity in CSA implementation; and
- Level of administrative, financial and technical accountability system that the potential service provider has in place.

8. Capacity building and training activities will be coordinated by the PMU based on annual training plans prepared by the DAOs. The relevant departments of the MAFS will have overall responsibility for preparation of training activities, including selection of demonstration plots, refurbishment of the training facilities, delivering training courses, and organization of FFS, in coordination with selected local service providers in each project district. The necessary training will be provided by district or national staff from the MAFS, assisted by contracted national or international specialists where needed including NGOs, private sector firms, and research institutions.

9. An Engineering firm will be hired for implementation of irrigation rehabilitation works under component 1.2(a,b) and a service provider under component 1.2(c) for community-based irrigation management. The local branches of the MAFS and MoWA with the support from the engineering firm will carry out a preliminary assessment about the demand for rehabilitation of on-farm and off-farm irrigation systems. Active consultations will take place after this technical work regarding interventions, works to be carried out and the required finance. A detailed feasibility analysis and further preparation of procurement packages will be guided and prepared by engineering firm in consultations with local communities. Subsequent maintenance work, particularly by local communities, will be emphasized. These consultations will be required before any final decision is adopted and must involve local communities and local authorities.

10. Investments to be supported under component 1.3 and 1.4 will be implemented by the PMU who will contract necessary local service providers such as IT firms, design companies etc. who will provide necessary services for establishing the state-of-the-art soil laboratory, construction of the fertilizer blending plant, support for digitizing information and setting up a market information system, etc.

11. **Component 2.** The PMU will have overall responsibility for implementation of this component. Local service providers will be contracted under the umbrella of an international service provider for implementation of the horizontal and vertical alliances and VC development activities. The services of the international service provider are expected to be terminated by project year 3 as it is expected that by then trainers, extension staff, PMU staff would be sufficiently trained to implement the activities during the remainder of the project.

12. The MGP will be administered by a Matching Grants Secretariat (MGS) within the PMU. The Grant Program under Component 2 will be governed by a Grant Manual appended to the (PIM) delineating clear guidelines, procedures and selection criteria for all three windows: small grants to smallholder farmers, larger grants to agri-enterprises as well as sub-projects for investments in nutrition.

13. For the nutrition sub-component, a local nutrition officer will be hired in the PMU for dedicated implementation of the nutrition related activities. A service provider will be contracted to design the awareness campaign and implement the sub-component in collaboration and guidance from relevant government institutions such as FNCO at highest level and nutrition club and responsible unit under MAFS. The PMU will be responsible for managing the administering the small grants programs for investments in nutrition-sensitive food chains.

Monitoring and Evaluation

14. The project will support the PMU to develop and implement a robust M&E system and framework to monitor progress toward the PDO and intermediate indicators. A full-time M&E Specialist will lead the results measurement exercises, with guidance from the World Bank team. The PDO indicators are designed to capture the incremental changes related to the project among its direct beneficiaries. Intermediate indicators will track periodic progress toward the PDO. The M&E system will focus explicitly on disaggregating results by gender and age (youth) for key performance indicators wherever possible. The Results Framework includes the complete list of indicators for Components 1 and 2, the frequency of data collection for each, and the entity responsible for collecting the data. The M&E system will feature a Management Information System (MIS), spot checks, evaluations, and beneficiary assessments to gather accurate data on the indicators. The MIS will record all information related to project activities, including (a) basic information on producer organizations, (b) details on business plans and productive partnerships, (c) subproject information (such as physical and financial progress), (d) the financial management data from which Statements of Expenditure will be

provided to the World Bank, and (e) project management information for the semi-annual progress reports.

15. The PMU will be responsible for the M&E system, including reporting on progress for key performance indicators in accordance with World Bank requirements. The system will draw upon consultants to accompany project implementation and provide information for the project's M&E plan, to be funded under Component. It is a priority to ensure that these consultants are well trained and supervised to ensure consistent data collection, particularly when facilitating participatory financial evaluations with PO members. The PMU, with World Bank support, will be responsible for periodically analyzing data on results as part of the project's communication strategy with key stakeholders. In addition, the PMU will be responsible for supporting the baseline survey, midterm evaluation, and project impact evaluation.

16. For monitoring safeguard issues, an experienced and reputable Environmental and Social Consulting firm will be hired within the first year of project implementation to carry out comprehensive and thorough environmental and social assessments to guide the designs of the irrigation systems, monitoring water use, etc.

17. To monitor gender impacts, the project will track the participation of men and women, as well as the extent to which each group benefits from project-supported activities. The project results framework includes gender indicators to ensure that gender impacts are monitored during implementation. Women will be supported to take advantage of project-generated opportunities, to mitigate the risk of women being crowded out by men as activities become more profitable, or when larger operators with more capital enter local markets. To this end, focused awareness campaigns will be organized to encourage women's participation in all project components.

Implementation Support Plan

18. Regular implementation support missions will focus on reviewing quality of implementation, capacity of implementing agencies, disbursement projections, and on finding solutions to implementation challenges. Additionally, the project's fiduciary aspects (for example, financial management arrangements and procurement assignment undertaken) will be reviewed along with project activities' compliance with the environmental and social safeguard policies. The World Bank financial management, procurement staff, and social and environment safeguards person will also join regular implementation support missions to build the client's capacity and to ensure compliance. Results achievements against the set targets and goals mentioned in the results framework will be presented in the Implementation Status and Results Report (ISR) at the end of every mission. Joint World Bank and IFAD supervision will be conducted upon approval of IFAD co-financing for the project.

19. A project midterm review will be conducted after two-and-a-half years of project implementation. The review will cover a comprehensive assessment of the progress achieved thus far and will serve as an opportunity to re-assess the project design and related issues and make appropriate adjustments as necessary. Lessons learned will be fed into the implementation process going forward.

ANNEX 2. CSA Technologies Supported Under SADP-II

Table 5. Menu of CSA Technologies

Technologies	Productivity	Resilience	Mitigation
Improved and stress tolerant varieties			
High yielding varieties	✓	✓	✓
Nutrient dense crops	✓	✓	✓
Drought resistant varieties	✓	✓	✓
Heat resistant varieties	✓	✓	✓
Pest and disease resistant varieties	✓	✓	✓
Germplasm collection, characterization and conservation	✓	✓	
Conservation Agriculture (CA) + Integrated Soil Fertility Management (ISFM)			
CA (basins, cover crops, and minimum tillage)	✓	✓	✓
Crop rotations (legumes and winter wheat)	✓	✓	✓
Crop rotations (relay cropping)	✓	✓	✓
Crop residue management	✓	✓	✓
Mulching and green manure	✓	✓	✓
Manure management	✓		✓
Compost management	✓		✓
Contour ploughing	✓	✓	✓
Intercropping	✓	✓	✓
Soil testing and fertility management services	✓	✓	✓
Soil testing based inorganic fertilizer application	✓	✓	✓
Irrigation			
Sprinkler irrigation	✓	✓	
Drip irrigation	✓	✓	✓
Water harvesting (underground)			
Rehabilitation of small-scale irrigation schemes	✓	✓	
Water and energy efficient technologies for water lifting (solar, treadle, and energy-efficient pumps)	✓		✓
Infiltration weirs to improve recharge while reducing erosion	✓	✓	
Implementation of protective ditches, irrigated sites, and production areas against floods	✓	✓	
Protection against water erosion and wind erosion	✓	✓	
Protection against stray animals	✓	✓	
The application of good irrigation and drainage management practices	✓	✓	
Agroforestry			

Establishment of seed multiplication and tree nurseries	✓	✓	✓
Promoting sustainable tree species	✓	✓	✓
Fruit tree cultivation	✓	✓	✓
Farmer Managed Natural Regeneration (FMNR)	✓	✓	✓
Tree nursery (village or individual)	✓	✓	✓
Windbreaks, hedgerows, enhanced clearing, live-hedges	✓	✓	✓
Promotion of non-timber forest products	✓	✓	✓

ANNEX 3: Economic and Financial Analysis

A. Introduction

1. The project will support increased adoption of climate smart agricultural technologies in Lesotho's agriculture, enhanced commercialization and improved dietary diversity among targeted beneficiaries. It will promote smallholder commercialization and facilitate private sector investment in agribusiness by fostering productive linkages between smallholder farmers and selected agribusiness. It will support development of the horticulture value-chain which has significant potential for enhancing competitiveness, improving nutrition, creating jobs and improving incomes. It will also contribute to the establishment of a climate resilient agricultural sector through the provision of irrigation as well as training in climate smart agricultural practices. These activities are expected to increase marketed surplus, strengthen farm input and output markets and raise farm productivity in the project area. Smallholder farms will have better access to output markets and irrigation water through producer and community-based associations while agro-processing companies are expected to benefit from more reliable supply of raw material and opportunities to upgrade their technological capacity and equipment.

2. The main rationales warranting public action include the correction of market failures, the incorporation of externality or spillovers, and social and political concerns. The successful transformation of Lesotho's smallholder agricultural sector will not be possible without sustained support in the form of investment capital, technical advisory services and improved technology. Such support is likely to come from three main sources: (i) private sector, (ii) public service providers, and (iii) non-government organizations (NGOs), and donor-funded agencies, including international financial institutions, such as the World Bank.

3. The World Bank, Japanese Policy and Human Resources Development Fund (PHRD) and other donors are critical for providing technical assistance and investment support to develop and transform Lesotho's agricultural sector. The public sector assists with building in-country capacity. Most technological innovations have been, and continue to be, introduced and promoted by donor-funded projects and programs. SADP-2 will pay particular attention to developing the country's horticulture subsector. Promising technologies currently being promoted by NGOs and donors include conservation agriculture (CA); keyhole gardens and other small-scale vegetable production technologies. SADP-2 will scale up and introduce more technologies involving improved and stress tolerant varieties, ISFM, agroforestry, and improved water management.

4. The World Bank has been providing support to Lesotho's agricultural sector through the ongoing SADP and its Additional Financing. The project has trained producers and processors in improved agricultural practices and provided investment support. The project has built trust and goodwill among the rural population for the World Bank support which are critical for future uptake of proposed project interventions. The World Bank is in a unique position to bring its regional and global experiences to bear and provide well-tested, low-cost solutions to boost agricultural productivity, increase climate resilience, promote improved dietary habits to decrease both malnutrition and obesity, create jobs, improve rural incomes and incentivize the participation of women and youth in the agricultural sector.

B. Overview

5. This annex presents the economic and financial analysis for the SADP-2 from 2019 to 2033[9]. The evaluation is built on the cost-benefit analysis methodology applied to a range of priority commodities identified during the design process for Lesotho. In addition, the analysis incorporates the estimated environmental benefits resulting from the GHG accounting, using the EX-ACT tool and methodology. The overall methodology for the present analysis builds on the approach used for ex-ante economic and financial analyses conducted for without-project and with-project scenarios.

6. The goal of the with-project scenario is to develop an agricultural production system that is able to promote agriculture commercialization, enhance farm productivity, increase climate resilience, and improve nutritional outcomes. It encourages product diversification and prioritizes commercial orientation through the participation of small and marginal farmers in agricultural value chains.

7. The Project's expected benefits streams result from construction and rehabilitation of irrigation infrastructure, scaling-up CSA practices and advisory services, support for horizontal and vertical alliances, and value chain development. The Project's expected benefits are multiple, ranging from increased productivity and incomes for agricultural producers and processors[10] to improved marketing to capacity development for key participants in the generation and dissemination of technology. In addition, other project benefits include job creation[11] from deepened domestic agricultural markets and entrepreneurship, poverty reduction by targeting smallholder farmers, women empowerment through contributing to household food security, better nutritional outcomes[12], and environmental benefits (climate co-benefits). The present analysis will focus primarily on the production gains and income benefit streams for project beneficiaries involved in priority crops, while also quantifying the environmental benefits.

8. This annex includes: (i) the financial analysis of two scenarios (without-project and with-project); (ii) the economic analysis of two scenarios, including the calculation of benefits resulting from the GHG accounting; and (iii) sensitivity analysis for the economic analysis. Overall, the analysis indicates profitable results in both financial and economic analysis under with-project scenario compared to without-project scenario.

C. Financial analysis

9. This analysis follows the standard methodology recommended by the World Bank, as described in Gittinger (1982)[13] and Belli et al. (2001)[14] . The financial analysis was conducted to assess the profitability of the potential project

[9] The "life" of investments in the CSA production technologies envisaged is unlikely to exceed 5 years. Even investments in pumps, drip irrigation systems, tunnel houses etc. have a maximum useful life of 10 years. Therefore, 15 years investment duration is assumed.

[10] Since it is hard to measure benefits for off-takers, the profitability indicators for financial analysis and economic analysis are conservative estimates.

[11] Investments in horticulture can help create jobs. Vegetable and fruits cultivation are more labor intensive than grain cultivation and can increase employment in rural areas: based on statistics for South Africa, commercial horticulture cultivation generates about 1.3 jobs per ha compared with 0.01 jobs per ha for maize (GDS 2016 and HORTGTO 2017). This suggests that more than 1.29*1000=1290 jobs could potentially be created in Lesotho if horticulture were commercially grown on 1000 ha area suitable for horticulture crops. (WB 2018 Unlocking the potential of Lesotho's private sector).

[12] Increased production of vegetables and fruits can help improve nutrition in a country where 15 percent of the population is undernourished and traditional diets area based on cereals. (WB 2018 Unlocking the potential of Lesotho's private sector).

[13] Gittinger, J. P. (1982). Economic analysis of agricultural project (2nd ed.). Baltimore John Hopkins University Press.

[14] Tan, Jee-Peng; Anderson, Jock R.; Belli, Pedro; Barnum, Howard N.; Dixon, John A; Tan, Jee-Peng; Anderson, Jock R.; Belli, Pedro; Barnum, Howard N.; Dixon, John A. 2002. *Economic analysis of investment operations analytical tools and practical applications (English)*. WBI development studies. Washington, DC: World Bank

technology adoption activities, modeled from the perspective of the target beneficiaries, and compared to the without-project situation. A total of eight models have been prepared: maize, sorghum, potato, tomato, cabbage, pumpkin, spinach and carrot.

Data and assumptions:

10. The 6.14 percent social discount rate used is in line with the World Bank guidelines and the country context. Using Ramsey formula[15] linking discount rates to growth rates, a 3.07 percent per capita growth rate in from 2008 to 2017 (WDI) translates into a 6.14 percent discount rate.

11. Total investment costs are US$57 million (US$50 million from IDA, US$2 million from the Japanese Policy and Human Resources Development Fund, and US$5 million from local beneficiaries). It is assumed that US$/Lesotho Loti (LSL) = 14.25. Two scenarios for sales prices, yields, and areas are presented in tables below.

Table 6.1: Areas, yields and sales prices for staple crops and horticulture crops

Commodities	Area (ha) under CSA technologies			Without-project		With-project	
	Irrigation rehabilitation	New irrigation	CA, ISFM, improved varieties, etc.	Yield (kg/ha)	Sales price (LSL/kg)	Yield (kg/ha)	Sales price (LSL/kg)
Maize	1,180	-	20,000	800	4.42	920	4.42
Sorghum	1,000	-	13,640	700	6.50	805	6.50
Potato	70	50	2,500	18,000	6.90	20,700	6.90
Tomato	70	42	1,200	25,000	15.12	27,500	16.64
Cabbage	70	42	1,200	26,300	10.33	28,930	11.37
Pumpkin	70	42	1,200	10,000	11.56	11,000	12.72
Spinach	70	42	1,200	5,800	10.16	6,380	11.17
Carrot	70	42	1,200	11,800	9.47	12,980	10.41

12. Yields of maize, sorghum and potato are targeted to increase by 15 percent, while yields of vegetables are assumed to increase by 10 percent.[16] It is assumed that real sales prices of maize, sorghum and potato will remain the constant for the duration of the investment; sales prices of vegetable crops will increase 10 percent to reflect the higher quality of vegetables resulting from the improved production technologies used.

[15] WB 2016 Discounting Costs and Benefits in Economic Analysis of World Bank Projects
[16] Realistic and conservative estimates for yield increase consider both the extent of adoption of CSA technologies and impact of extreme weather events (droughts, floods, storms, frosts, disease etc.).

Table 6.2: The phased development of irrigation rehabilitation and construction

Year	Rehabilitated Area (ha)	New Irrigation (ha)
1	260	0
2	390	13
3	390	39
4	390	52
5	390	52
6	390	52
7	390	52
Total	**2,600**	**260**

13. The financial activity models simulate farm-gate budgets per ha per year of running activities, considering revenues, production costs and net income. Production costs include cash inputs and labor costs. Cash costs include purchase of seeds (improved varieties), chemical fertilizers (basal and top-dress), organic fertilizer (manure), herbicides, fungicides, pesticides, expenses to hire animal draft power (ploughing), irrigation (when present), transport, and marketing fees.

14. Table below summarizes financial indicators (per ha) for each crop in both without and with project scenarios. For each horticultural crop and cereal crop, net income in with-project (WP) exceeds corresponding net income in without-project (WOP), showing positive incremental net benefits after project implementation. Thus, participation in the project is financially viable.

Table 6.3: Commodities financial indicators (LSL per ha) identified in financial analysis

Commodities	WOP			WP			WP-WOP
	Total Cost	Revenue	Net income	Total Cost	Revenue	Net income	Incremental in net income
Maize	5,125	3,536	-1,589	5,560	4,066	-1,493	96
Sorghum	6,522	4,550	-1,972	6,589	5,233	-1,357	615
Potatoes	37,487	124,200	86,713	43,103	142,830	99,727	13,015
Tomatoes	73,216	378,100	304,884	86,583	457,501	370,918	66,034
Cabbage	26,543	271,732	245,189	32,395	328,795	296,400	51,212
Pumpkin	12,258	115,620	103,362	14,837	139,900	125,063	21,701
Spinach	10,951	58,905	47,954	12,876	71,275	58,399	10,445
Carrot	44,861	111,699	66,838	49,122	135,156	86,034	19,196

D. Economic analysis

15. Economic analysis assesses project's overall profitability and value to society. The analysis has to be conducted in economic costs and considers private and public good benefits. All financial prices have to be converted into economic prices. The government together with development partners has been subsidizing fertilizer and other inputs including seeds, pesticides and herbicides at 50 percent (subsidization rate). In order to derive economic prices from financial

prices, input prices were adjusted to remove subsidies, and a standard conversion factor of 2 was used on non-tradable goods (assuming maize, sorghum and other horticultural crops are aimed to meet domestic demand first). In addition, a high unemployment rate along with a labor surplus in rural areas suggest the economic opportunity costs of labor are below financial costs. Thus, labor conversion factor of 0.7 is assumed.

16. Table below shows NPVs for crop production in US Dollars. It is assumed that local beneficiaries' contribution is equally spent in seven years and the Japanese PHRD is available by project effectiveness. As tables show, horticulture crops especially tomato and cabbage contributes the most to total NPV. Considering the investment costs, ENPV US$69.0 million is positive and ERR equals 25.1 percent that is above social discount rate.

Table 6.4: Projected economic cash flow (values in USD – increments: difference between with and without project scenarios)

Crops	2019	2020	2021	2022	2023	2024	2025	2026-2033
	1	2	3	4	5	6	7	8-15
Maize	-36,456	-58,236	-21,020	75,193	269,427	561,683	683,759	683,759
Sorghum	-54,266	-100,606	-104,875	-67,074	12,798	134,741	158,519	158,519
Potato	-190,281	-297,786	-181,239	152,053	692,171	1,439,115	1,707,824	1,707,824
Tomato	123,717	536,911	1,261,981	2,261,544	3,493,317	4,957,299	5,887,631	5,887,631
Cabbage	151,541	551,207	1,192,548	2,039,930	3,054,195	4,235,344	5,032,971	5,032,971
Pumpkin	57,076	215,501	475,710	823,065	1,241,428	1,730,798	2,056,983	2,056,983
Spinach	18,185	81,675	195,255	352,348	545,618	775,065	921,373	921,373
Carrot	23,605	123,566	310,282	575,400	909,117	1,311,434	1,556,100	1,556,100
Sub-total	93,120	1,052,232	3,128,641	6,212,460	10,218,072	15,145,478	18,005,160	18,005,160
IDA credit	-6,500,000	-8,500,000	-11,000,000	-10,000,000	-9,000,000	-5,000,000		
Japan fund	-2,000,000							
Beneficiaries	-714,286	-714,286	-714,286	-714,286	-714,286	-714,286	-714,286	
Project investment	-9,214,286	-9,214,286	-11,714,286	-10,714,286	-9,714,286	-5,714,286	-714,286	-
Net Cash flow	-9,121,165	-8,162,053	-8,585,645	-4,501,826	503,786	9,431,193	17,290,874	18,005,160

17. Economic analysis also considers externality, particularly shadow price of carbon. Compared to without-project, the annual reduction in CO2eq emissions reaches 58,196 tons in with-project over a period of 15 years starting from project implementation[17] (see Annex 4 GHG accounting for details). Assigning an economic value to this mitigation

[17] Benefits from annual reduction in CO2eq emissions are assumed to increase proportionally from year 1 (value 0) to year 6 (target value).

potential is important. The recent Guidance Note on Shadow Price of Carbon in Economic Analysis (September 2017) recommends "projects' economic analysis use a low and high estimate of the carbon price starting at US$40 and US$80 respectively in 2020 and increasing to US$50 and 100 by 2030". Following the World Bank Guidance Note, this analysis presents two scenarios: using the low and high range shadow price of carbon. The annual reduction in CO2eq emissions will be applied when calculating shadow price of carbon. Net carbon sinks will generate positive externalities and create great positive NPV. At discount rate of 6.14 percent, using the low range of shadow price of carbon, the NPV of environmental externalities would increase to US$20.1 million; while using the high range of shadow price of carbon, the NPV would reach US$40.3 million. Economic NPV will reach US$89.2 million and US$109.3 million with low and high carbon prices respectively. The results show that in addition to technical feasibility, the project activities can be highly productive and profitable in Lesotho. It can provide substantial environmental services including reduced emissions if production is well managed. With proper crop diversification and selection of technologies smallholders linked to agricultural value chains can contribute to increased landscape resilience as well.

E. Sensitivity analysis

18. Sensitivity analysis for key variables demonstrates the robustness of the economic results (Table below). NPV and ERR are relatively the most sensitive to changes in prices and yields of vegetable crops. The NPV (not including carbon benefits) is positive for all proposed changes, and the ERR (not including carbon benefits) is above the opportunity cost of capital. Since NPV of environmental externalities is positive, ENPV including carbon benefits will also be positive for all proposed changes. The analysis thus supports the public investment decision.

Table 6.5: Sensitivity analysis

Changes	NPV (US$ million)	ERR (%)
	Base case	
	69.0	25.1
	Project investment cost (IDA)	
+10%	73.4	27.6
-10%	27.5	14.7
	Yield change of maize, sorghum, and potato in WP compared to WOP	
From 15% to 10%	58.6	22.7
From 15% to 5%	48.1	20.2
	Yield change of vegetable crops in WP compared to WOP	
From 10% to 5%	40.2	18.2
From 10% to 0%	11.5	10.1
	Price change of vegetable crops in WP compared to WOP	
From 10 to 5%	34.6	16.1

From 10 to 0%	0.2	6.2
	Conversion factor for inputs	
From 2 to 2.5	54.9	21.4
From 2 to 1.5	83.2	28.7
	Conversion factor for labor	
From 0.7 to 0.9	67.7	24.7
From 0.7 to 0.5	70.4	25.4

ANNEX 4: Greenhouse Gas (GHG) Accounting

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

2. **Methodology.** 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), which was developed by the Food and Agriculture Organization of the United Nations (FAO) in 2010. EX-ACT allows the 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 scenario. EX-ACT estimates the carbon stock changes (emissions or sinks), expressed in equivalent tons of CO_2 per hectare and year.

3. **Project boundary.**

a. Total of 70,000 farmers are targeted to adopt CSA technologies. Land area under sustainable landscape management practices is targeted to be 45,000 ha. Area provided with new irrigation or drainage services is targeted to be 260 ha; area provided with improved irrigation or drainage services is targeted to be 2,600 ha. Number of Value Chains Supported would be six: potato, tomato, cabbage, pumpkin, spinach and carrot.

b. Land use change: 260 ha area of set aside land will be used for horticultural crops (potato 50 ha, 42 ha for each vegetable crop)[18] with drip irrigation, improved management practices and CSA practices. 10 % of farmers beneficiaries will adopt agroforestry in maize production systems on 0.5 ha each, which equal to 3,500 ha. This land use change is from maize land to agroforestry such as fruit (peach) trees.

c. Improved crops: With project intervention, total of 2,600 ha area (maize 1,180 ha, sorghum 1,000 ha, each horticultural crop 70 ha)[19] will be rehabilitated with irrigation. 38,640 ha[20] (maize 16,500 ha, sorghum 13,640 ha, potato 2,500 ha, 1,200 ha for each vegetable crops) of land will be under CSA practices such as CA including crop residue management, improved agronomic practices including improved and stress tolerant varieties[21], and ISFM. Under without project scenario, conventional agriculture practices include rain-fed, low inputs and limited irrigation are assumed to be applied. Yields of maize, sorghum and potatoes will increase by 15% over the project life; yields for vegetable crops will increase by 10 percent.

[18] listed in Annex 3 Table 5.1
[19] listed in Annex 3 Table 5.1
[20] excluding 3,500 ha with agroforestry as stated before
[21] the improved varieties have advantages for weed competition, pest resistance and drought tolerance

d. Fertilizer and manure application[22]:
   - Maize will be applied with NPK 3:2:1 (25) fertilizers; fertilizer use will increase. Maize will be applied in with project scenario.
   - Sorghum will be applied with NPK 3:2:1 (25) fertilizers and LAN (28); fertilizer use will increase. Manure application will increase, too.
   - Potato will be applied with NPK 2:3:2 (22): fertilizer use will increase. Manure application will increase, too.
   - Tomato is assumed to be applied with NPK 2:3:2 (22): fertilizer use will increase. Manure application will increase, too.
   - Cabbage is applied with NPK 2:3:2 (22) and LAN (28): fertilizer use will increase. Manure application will increase, too.
   - Pumpkin is applied with NPK 2:3:2 (22): fertilizer use will increase. Manure application will increase, too.
   - Spinach is currently applied with manure and the application will increase.
   - Carrot is applied with NPK 2:3:2 (22): fertilizer use will increase. Manure application will increase, too.
   - Due to lack of data on type of manure applied and its nutrient content, current analysis does not include its carbon footprint considering its relative limited impact on GHG emissions.
   - Due to lack of active ingredient data about pesticide, fungicide and herbicide, corresponding parts in EX-ACT cells are input with zero at current stage considering its very limited impact on GHG emissions.

e. Infrastructure: Drip irrigation infrastructure will be newly built in 260 ha.

f. Energy consumption: Given current information, soil labs and controlled atmosphere stores affect electricity energy use. Electricity use will increase from 3,110 MWh per year to 12,720 MWh per year. In addition, transportation to markets affects fuel use. Diesel use will increase from 1,395 m3 per year to 1,576 m3 per year.

4. **Baseline scenario.** Baseline scenario without project assumed that *limited improved agriculture technologies and practices are used*.

5. **Data sources.** Main project specific data sources used for GHG accounting are from FAOSTAT and Lesotho government.

6. **Key assumptions**. The project region in Lesotho has cool temperate climate with dry moisture regime. The dominant soil type is high activity clay. The project implementation phase is 7 years and the capitalization phase is assumed to be 8 years. The 15 years implementation period is assumed in the use of EX-ACT due to the timeframe from 2019 to 2033.

[22] Details including total amount and per hectare amount of fertilizer per crop in a without and with project scenario are explained in the EX-ACT calculation file.

7. **Results**. The net carbon balance quantifies GHGs emitted or sequestered as a result of the project compared to the without project scenario. Over the project duration of 15 years, the project scenario will constitute a net carbon sink of 872,940 tCO_2-eq, equivalent to 58,196 tCO_2-eq per year, 1.29 tCO_2-eq per ha per year.

Table 7: Results of the ex-ante GHG analysis

	Over the economic project lifetime (tCO2 eq)			Annual average (tCO2 eq/ year)		
Project activities	GHG emissions of without project scenario (1)	Gross emissions of project scenario (2)	Net GHG emissions (2-1)	GHG emissions of without project scenario (3)	Gross emissions of project scenario (4)	Net GHG emissions (4-3)
Land use change		-35,201	-35,201		-2,347	-2,347
Improved practices in annuals	-332,049	-679,193	-347,144	-22,137	-45,280	-23,143
Improved practices in perennials	77,213	-545,511	-622,724	5,148	-36,367	-41,515
Inputs & Investments	112,243	244,372	132,129	7,483	16,291	8,809
Total	-142,592	-1,015,533	-872,940	-9,506	-67,702	-58,196
Per hectare	-3.17	-22.57	-19.40	-0.21	-1.50	-1.29

ANNEX 5: Financial Management Arrangements for the Project

A. Budgeting arrangements

1. The PMU will prepare an annual project budget and will be responsible for producing variance analysis reports comparing planned to actual expenditures on monthly and quarterly bases. The periodic variance analysis will enable the timely identification of deviations from the budget. These reports will be part of the interim unaudited financial reports (IFRs) that will be submitted to the World Bank on a quarterly basis.

B. Accounting arrangements

2. The project will use the existing accounting system for the ongoing Smallholder Agriculture Development Project. The experience with the system concludes that it is adequate to absorb the new project. The project will be consolidated in the annual financial statements of the existing project.

C. Internal control and staffing arrangements

3. Internal Control Systems. The PMU has a PIM to support the ongoing project. Supervision reports and external audit reports have however revealed a weakening internal control environment on the management of the competitive grant program. Funds were not used for intended activities. There will be a need to strengthen the staffing arrangement to allow for more supervision and capacity building for the grant program.

D. Funds flow and disbursement arrangements

4. Banking arrangements. The PMU will be required to open a segregated Designated Accounts denominated in United States Dollars at the Central Bank to receive the funds from IDA. Project Accounts denominated in Maloti will be opened to process local payments. Transfers will be made from the DA based on the forecast to transfer to the project Account

5. Funds flow arrangements. Upon effectiveness of the financing agreement and submission of a withdrawal application, the World Bank will disburse an initial amount equivalent up to six months expenditure into the Bank Designated Account. Subsequent disbursements will be made based on withdrawal applications and Statements of Expenditures (SOEs). For the grant mechanisms used in the project, the PMU will use the existing disbursing, reporting and monitoring mechanisms. The grants are disbursed based on agreed milestones at the contracting stage from the Project Account. Subsequent disbursements are based on achieved and verified milestones. Details of funds flow will be spelt in the Grants Manual.

6. Disbursement arrangements. The transaction-based disbursement reporting will be used due to the accountability issues detected on the ongoing project. Disbursement methods will include direct payments, special commitments and reimbursements. Details concerning disbursements will be spelt out in the project's Disbursement Letter.

7. Financial reporting arrangements. The PMU will prepare quarterly un-audited IFRs for the project in form and content satisfactory to the World Bank, which will be submitted to the World Bank within 45 days after the end of the quarter to which they relate. The template is the same for the existing project.

E. Auditing arrangements

8. The project financial statements will be audited by the Office of the Auditor General in accordance with International Standards on Auditing, and the audit report together with the management letter and management responses will be submitted to the World Bank within six months after the financial year-end.

F. Financial Management Action Plan

9. The following actions need to be taken to enhance the financial management arrangements for the Project:

- Hire an additional Accountant to support the project by project effectiveness

G. Conclusion

10. The conclusion of the assessment is that the financial management arrangements meet the World Bank's minimum requirements under the World Bank Policy and Directive on Investment Project Financing. The overall residual risk rating for the project will be Substantial due to the existing accountability issues. In light of this, the project will have two field supervision missions per annum.

Map of Lesotho