

Environment and Social Management Framework

Lesotho Second Private Sector Competitiveness and Economic Diversification
Project (PSCEDPII)

Horticulture

Executive Summary

This Environmental and Social Management Framework (ESMF) provides an overview of potential socio-economic and environmental impacts in the horticulture component of Lesotho Second Private Sector Competitiveness and Economic Diversification Project (PSCEDPII). This ESMF is written to comply with Lesotho legal framework and the World Bank policies, specifically Environmental Assessment (OP 4.01) and Pest Management (OP 4.09).

The ESMF includes a matrix to manage potential impacts and a screening tool to assess prospective sub-projects, review, approve and implement future sub-project along with activities and distribution of responsibilities to comply with Lesotho and World Bank policies. The key components of the ESMF are: i) training to ensure environmentally and socially sound orchard management, especially when agro-chemicals are used; ii) effective monitoring of project components through the engagement of a horticulture coordinator and GLOBAL G.A.P.; and iii) community engagement and communication to manage expectations and distribution of benefits.

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Abbreviations

ARC	Agricultural Resource Centres
CO ₂	Carbon Dioxide
DAO	District Agriculture Officer
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GoL	Government of Lesotho
GDP	Gross Domestic Product
LDC	Least Developed Country
LNDC	Lesotho National Development Corporation
LSL	Lesotho Loti
MAFS	Ministry of Agriculture and Food Security
MFLR	Ministry of Forestry and Land Reclamation
MTEC	Ministry of Tourism, Environment and Culture
MTICM	Ministry of Trade and Industry, Cooperatives and Marketing
NES	National Environmental Secretariat
PDO	Project Development Objective
PSCEDPII	Lesotho Second Private Sector Competitiveness and Economic Diversification Project
PSCEDP	Private Sector Competitiveness Project
SESA	Strategic Environmental and Social Assessment
SME	Small and Medium Enterprises
TRIPS	The Agreement on Trade Related Aspects of Intellectual Property Rights
UES	Unified Extension System
WTO	World Trade Organisation

LSL1=US\$0.10
US\$1=LSL9.9

1. Context

Lesotho is a landlocked mountain kingdom with 2.2 million inhabitants. Fully surrounded by South Africa, its economy is heavily dependent on the larger neighbour; water export alone, from the Lesotho Highlands Water Project, accounts for 23 percent of GDP.¹ Lesotho largely exports unprocessed products; products that could be processed or produced in Lesotho are imported from South Africa.

Historically, remittances from Lesotho miners working in South African mines were a significant source of income, but have declined steadily in real numbers and as a percentage of the economy, from close to 50 percent of GDP in the 1980s to under 20 percent at present.² In the past decade manufacturing as percent of GDP declined from 20 percent in 2004 to 11 percent in 2010.³ Unemployment, as percent of the labour force, is 25.3 percent, 28 percent for females.⁴

In 2011, 72.5 percent of the population lived in rural areas, the vast majority engaged in agriculture, working the roughly 10 percent of the Lesotho's land that is arable. Agricultural production is traditional, reliant on rain and with few inputs. Farming is largely subsistence based, from small plots and poor soils that produce low yields and face significant risks due to weather conditions. Historically, Lesotho exported cereals, but in the past three decades, the country became an increasingly larger net food importer.

Given the economic challenges and the need to boost employment, the Government of Lesotho (GoL) is seeking to reduce private sector bottlenecks and promote Lesotho's comparative advantages by providing support to key sectors, including commercial fruit production. Under the Lesotho Second Private Sector Competitiveness and Economic Diversification Project (PSCEDPII), the World Bank is supporting the GoL to enhance commercial horticulture development.

2. Purpose of the Environmental and Social Management Framework

This report provides the Environmental and Social Management Framework (ESMF) for horticulture activities under PSCEDPII. The ESMF is required under the World Bank Operational Policy 4.01 for projects that support a number of unknown sub-projects or components or when project components are spread over a larger geographical area. The ESMF sets out the basic principles to screen subproject activities and processes to avoid, minimize or mitigate potentially adverse environmental or social impacts. The ESMF specifically provides:

- An overview of relevant socio-economic issues and biophysical setting of activities;
- Review of potential socio-economic and environmental impacts;
- Applicable legal framework for Lesotho and the World Bank;
- Screening tool to assess prospective sub-projects, review, approve and implement future sub-projects;
- ESMF tasks and responsibilities;
- Budget estimates for ESMF activities.

¹ World Bank: *Project Appraisal Document for Private Sector Competitiveness and Economic Diversification Project*, 2007.

² Lesotho Government Online: <http://www.gov.ls/about/default.php>.

³ World Bank: *Lesotho Overview*.

⁴ World Bank: *databank* (2008 numbers).

The ESMF was prepared in accordance with applicable World Bank safeguard policies and Lesotho environmental legislation. The preparation included the following activities:

- Data gathering;
- Literature and legislative review;
- Field visits to existing fruit orchards piloting commercial production;
- Consultation with key stakeholders, including government agencies and farmers involved in fruit orchards (list of persons met is in Appendix 6);
- Assessment of potential social and environmental impacts;
- Identification of impact mitigating measures;
- Preparation of sub-project guidelines.

The World Bank procedures require that an ESMF be prepared and publicly disclosed prior to project appraisal. This allows the public and other stakeholders to comment on the possible environmental and social impacts of the project, and the appraisal team to strengthen the frameworks as necessary, particularly measures and plans to prevent or mitigate any adverse environmental and social impacts.

To this end, this document will be publicly released through the World Bank's InfoShop and in public locations in Lesotho. The documents will be made available by the Ministry of Trade & Industry in English and Sesotho in compliance with the World Bank's *Public Consultation and Disclosure Policy*.

3. PSCEDPII Objectives

The development objective of the proposed project is to contribute to increased private sector investments, firm growth and jobs created in non- traditional sectors. This will be achieved by (i) improving business environment; (ii) increasing access to finance; (iii) supporting investment promotion in new sectors with increased backward linkages to the local economy and (iv) targeted support to new growth sectors such as horticulture and tourism all of which will benefit both micro entrepreneurs and Small and Medium Enterprises (SMEs).

This Environmental and Social Management Framework (ESMF) covers the subproject on horticulture. The subcomponent provides assistance to scale up of fruit production and will support associated processing in the medium term. The scale up will focus on smallholder associations, with the potential for larger scale commercialization through private sector participation. The procedures established under the ESMF can be continued by GoL agencies as commercialization takes off.

The project will help support the expansion of upstream activities, including seedling nursery development, expansion of commercial production of deciduous fruits (35 hectares), and strengthen capacity of local on-farm technical support services; and downstream activities beginning in 2016 when the project anticipates increasing volume of marketable crop entering the market from existing and new farms. Of the marketable products, Grade 1 products will be targeted for export markets, Grade 2 products for domestic markets, and Grade 3 and lower for local value added processing. In this regard, downstream activities will focus on the development of local supply and value chains for deciduous fruit, farm certification (GLOBAL G.A.P) which will enable Basotho farmers the opportunity to export Grade 1 products to any market in the world and expand marketing options for local products both within and outside Lesotho.

4. PSCEDP Description

Lesotho is currently a net importer of fruit and there are significant prospects for a scale up of Private Sector Competitiveness and Economic Diversification Project (PSCEDP) activities.⁵ The microclimate growing conditions enables ideal production conditions of high value horticulture and an early season harvest compared with neighbouring South Africa. Competitive wages and proximity to potential markets ensures a premium on crop prices. PSCEDP specifically focuses on the scale up of fruit orchard production in Lesotho to help tap into high value niche markets. The demand for fruits deemed suitable for Lesotho's climate is expected to grow 12-24 percent annually.⁶

The support for horticulture is crucial as farmers have been unable to shift to higher value crops due to associated risks and lack of development of market linkages.⁷

When the PSCEDP support was introduced there was no commercial production of tree crops in Lesotho. The farmers initially participating in PSCEDP (see table 1) charted the way for larger scale commercial fruit orchards and piloted a variety of trees. The farmers are on track to receive GLOBAL G.A.P certification that will allow for international export, likely through partnership with an experienced South African marketing and distribution company to be recruited competitively. Towards the end of PSCEDP a multi-farmer association was established on 10 hectares of joint land in Mahobong with a first expected commercial harvest in 2016.

Table 1: Individual farmers who piloted horticulture in PSCEDP

Orchard location	Mahobong	Thuathe	Qoqolosing
Orchard owner	Mr. Kekeletso Phothane	Mr. Blessing Nkhasi	Mr. Phihlela Motebang
Number of trees	1,990	1,051	958
Orchard size	2.3 ha	1.2 ha	0.74 ha

Source: Global Development Solutions analysis of data provided by PSC Technical Consultants.

The horticulture component of PSCEDP seeks to improve quality, volume and delivery capability of Basotho farmers by transitioning away from traditional smallholder farming into group or block farming methods similar to those employed in Mahobong. The move from supporting small-scale growers producing fruit on 1-2 hectares (under PSCEDP) to technical support for larger farmer's associations allows the project to satisfy purchaser's interest in reliable production chains that can supply volume and quality.

Through PSCEDP, one (1) farmers association with approximately 35 hectares⁸ in an area with ideal growing conditions will be identified and receive technical assistance. The land contributed by each farmer towards the association plot must be adjacent. The participating farmers must commit to five-year participation in the program to be eligible. The aim is to identify a suitable group of farmers by the end of 2013 in order to plant trees in 2014.

⁵ PSCEDP was a World Bank supported pilot of horticulture production in Lesotho that supported fruit orchard establishment between 2007 and 2013. World Bank: *Project Appraisal Document, Private Sector Competitiveness and Economic Diversification Project* (2007).

⁶ World Bank: *Project Appraisal Document, Private Sector Competitiveness and Economic Diversification Project* (2007).

⁷ World Bank: *Lesotho - Sharing Growth by Reducing Inequality and Vulnerability: Choices for Change. A Poverty, Gender and Social Assessment* (2010).

⁸ 35 hectares is a size sufficient to warrant an investment in a pack house operation.

The condition for participating farmers is that there are clear long-term leases of land (whether through traditional or formal arrangements). The farmers will either establish the partnership as a formal company or in a producers association with clear benefit sharing arrangements and conditions. The associations will use tree varieties that have shown to perform well in Lesotho under PSCEDPI. PSCEDPII support will focus on development of local supply and value chains for deciduous fruit, orchard certification (GLOBAL G.A.P.) that will enable Basotho farmers to export Grade 1 products to any market in the world, expand marketing options for local products both within and outside Lesotho.⁹

PSCEDPII will provide funding to enable transition from cereal production to fruit orchards, which will likely include subsidies to compensation for the investment costs and income lost due to transition. Calculated based on prior production, the livelihood stipend is provided on a monthly basis to participating farmers. Participating farmers will provide the labour inputs needed and are expected to pay the workers through the proceeds of the project funds. The social and labour standards practiced in the project areas are expected to spill into the rest of the country.

In the medium term, other small-scale farmers or investors may establish additional orchards as the barriers for production are expected to decrease with better market linkages through the existing production. This will require development of a local tree nursery to supply existing, expected future farmer association and private investors. The development of a nursery farm is essential as the desired fruit tree varieties are imported and often not available.

Grade 1 fruit crops will primarily go towards export; Grade 2 products can be sold in the local markets, replacing current imports from South Africa. Grade 3 and lower products would ideally be absorbed through value added production. With large quantities of fruits expected from the Mahobong farmer's association in the 2016 growing season,¹⁰ PSCEDPII hopes to entice private investment towards activities that could include canning, juicing and drying or development of support industries producing packaging materials or other materials.¹¹ Investors, who have interest in expanding into value added production, will have sufficient fruit production with which to base their investment thus further increasing employment and technology transfers to Lesotho. As the volume of crops increase into 2020, it is anticipated that private investment flows will respond to opportunities expected to evolve in the food-processing sector.¹² It is not anticipated that the project will allocate project funds towards goods and works to provide direct support toward downstream activity. Specifically, the focus of the horticulture component will shift more towards technical assistance for supply chain management, investment promotion and knowledge-based support to facilitate the development of a competitive private sector.

The direct PSCEDPII beneficiaries are small-scale farmers with access to land in a suitable microclimate, soil conditions and access to water who are selected to participate in the project either through the establishment of an association or through

⁹ Global Development Solutions: *Tree Crop Production in Lesotho: Business Plan for the Pilot Farms*.

¹⁰ The investment would absorb the expected high volume of grade 3 and lower products that are likely due to lack of experience in the post-harvest handling for the first harvest.

¹¹ As the food processing industry begins to develop in Lesotho, this is expected to trigger demand for packaging material. In this regards, Lesotho can expect to see increased flow of investments in a range of support industries, including packaging. Global Development Solutions: *Tree Crop Production in Lesotho: Business Plan for the Pilot Farms*.

¹² Global Development Solutions: *Tree Crop Production in Lesotho: Business Plan for the Pilot Farms*.

the establishment of nurseries on their land. These small-scale farmers will benefit from a range of incentives and technical support to convert their land to fruit orchards, with an expected per hectare revenue of approximately US\$8,500 annually after the third season growing to US\$30,500 in the fifth season. A half-acre nursery producing 40,000 seedlings per season can generate up to US\$54,600 annually. The comparison income is US\$220 from one hectare of maize.¹³ Local community members will benefit directly from employment and indirectly through increased economic activity in the otherwise depressed rural economy. With an expected size of 30 hectares, the future farmers association will create approximately 200 seasonal jobs at minimum wage (currently LSL53/day).

The Business Plan for horticulture development under PSCEDPII sets out to contribute to national objectives by:

- Transforming Lesotho into major producer and exporter of early variety tree crops by demonstrating that commercial deciduous fruit production is competitive and sustainable;
- Improving livelihoods and food security of rural farmers through the production, export and processing of high value tree crops;
- Reducing farmers' reliance on maize as a major source of income and food security;
- Developing a competitive value chain for tree crops including:
 - Sales of fresh produce in local and export markets;
 - Juicing, canning and drying facilities for products of Grade 3 and lower quality; and
 - Food processing industry based on derivatives from tree crops.
- Expanding production of tree crops in Lesotho as a way of engaging rural farmers in green economic growth through natural resource management, soil and water conservation activities, including reduction in greenhouse gas emissions.

Expected results include:

- Increased export of fruit and substantial reduction in fruit imports;
- GLOBAL G.A.P. certification of participating farms which enables international export;
- Network of nurseries for tree seedlings throughout Lesotho to meet local needs;
- Commercial investments in fruit production, including investments in value added production;
- Reduced reliance on maize production;
- Improved livelihoods amongst poor farmers.

The fruit orchard developments also provides for broader green economic development and improved natural resources management. The project introduces soil and water conservation, and reduces greenhouse emissions through carbon dioxide (CO₂) fixation. One hectare apple orchard can fix up to 45 tons CO₂, while at the same time release 34 tons of oxygen and have the benefit of cooling capacity equivalent to 11 billion BTUs. The expected 30-35 hectare orchard has the potential of fixing 1,350 tons of CO₂ while releasing 1,013 tons of oxygen and 338 billion BTUs of cooling benefits. This opens the potential to collateralize development loans by trading carbon credits.¹⁴

¹³ Global Development Solutions: *Tree Crop Production in Lesotho: Business Plan for the Pilot Farms*.

¹⁴ Global Development Solutions: *Tree Crop Production in Lesotho: Business Plan for the Pilot Farms*.

Table 2: Expected PSCEDPII Activities

Phase 1: Support for farmers association	
Main activity	Associated activities
Establish farmer association, with app. 35 hectares of joint land	Identification of potential locations (soil, climate and access to water – expected in Maseru, Botha-Bothe, Leribe, Berea and Mafeteng districts)
	Identification of potential participants
	Establish land ownership
	Develop association rules, including obligations, responsibilities and benefit sharing
	Establish association as legal entity
Technical support for horticulture development	On farm training on existing fruit orchards
	Training in: <ul style="list-style-type: none"> ▪ Soil and water conservation ▪ Planting ▪ Irrigation
	<ul style="list-style-type: none"> ▪ Pests and pesticide handling ▪ Fertilizer application ▪ Orchard management (GLOBAL G.A.P. and blue book management) ▪ Weather related prevention (netting, live wind screen) ▪ Other prevention (fencing, storage, guarding) ▪ Pruning
	On-going support to strengthen association, enable dispute resolution
	Increased capacity of public extension agents to provide advice on technologies relevant for smallholders
Financial support towards	Offset lost income in the first three years of lost income
	Support towards initial labour cost
	Purchase of trees, pesticides, fertilizer and other input
	Initial Global Gap certification

5. Socio-economic and Biophysical Setting for Project Activities

This section provides an overview of environmental and socio-economic conditions relevant to the project area, not a complete environmental or social baseline of Lesotho.¹⁵ Qualitative research suggests close relations between the environmental conditions and socio-economic opportunities in Lesotho. The research shows local causes of income insecurity in agricultural production as a main source of poverty.¹⁶ Soil erosion, lack of productive land or labour, lack of adequate farming inputs and weather impact (drought and harsh weather conditions) were main causes. The decline of the natural resource base could result in increased vulnerability and exclusion of rural population.

5.1 Socio-economic Conditions

Lesotho's GDP growth ranged from 4.7 to 6.8 percent in the last three years, but economic growth has historically had little distributional effect. With a Gini of 0.66 Lesotho incomes are highly unequal, restricting developmental opportunities.¹⁷

¹⁵ Unless otherwise source, the data in this section originates from *Environmental Evaluations of a Horticulture Demonstration Farm in Lesotho* and *Lesotho - Sharing Growth by Reducing Inequality and Vulnerability: Choices for Change. A Poverty, Gender and Social Assessment*.

¹⁶ World Bank: *Lesotho - Sharing Growth by Reducing Inequality and Vulnerability: Choices for Change. A Poverty, Gender and Social Assessment* (2010).

¹⁷ World Bank: Lesotho Country Brief.

Economic development is challenged by the high rate of chronic poverty and unemployment. The latest available data shows that 43 percent of the population live on less than US\$1.25/day and 62 percent less than US\$2/day. People in rural areas have lower incomes and higher incidence of poverty: 60 percent fall below the national poverty line of US\$1/day.¹⁸ The depth and severity of poverty is significantly higher in the mountainous rural districts.¹⁹ Poverty levels significantly impact educational opportunities. Unemployment, as percent of the labour force, is 25.3 percent, 28 percent for females.²⁰

In 2011, 72.5 percent of the population resided in rural areas, the vast majority of whom engaged in agricultural production. As a percentage of GDP, agricultural activities have declined steadily to a 7.76 percent share in 2011. Farmers engage primarily in traditional subsistence production with few external inputs or market opportunities. Farms are often located in remote villages far from infrastructure. The average land cultivated per farmer is 1.3 hectare – only 11 percent cultivate over 3 hectares. However, GoL subsidies have traditionally favoured farmers owning more than 15 hectares. Most of the crops and livestock are consumed locally and little is sold to outside markets. Maize, wheat and sorghum are main crops, but only five percent of farmers sell any surplus maize and only 0.2 percent sells all of their production. 50 percent of rural dwellers record farming as the main source of income and there are few opportunities for off-farm income outside informal spin offs such as traditional beer-brewing or fuel wood sale. As a result, Lesotho is a net food importer and rural households are typically unable to meet their basic needs and often rely on food donations.

Rural households traditionally relied on remittances as a way to build resilience, but the main source of remittances, through male labour in South African mines, has steadily declined leaving few alternatives for off-farm incomes.

World Bank data suggests 58 percent of children aged 7-14, engage in agricultural related work and that poor nutrition stunts growth for 39 percent of all children (35/43 percent for females/males respectively).²¹

Gender inequality is entrenched in Lesotho and reflected in the (limited) available data. Until 2006, women were considered minors under both traditional and formal law. The Basotho culture prescribes the traditionally accepted roles for women and men – for example, Basotho women are expected to grow food, collect water and fire wood. Women could not own or inherit property, enter contracts, make formal complaints, be party to lawsuits or get their own passports. This changed through the passage of the Legal Capacity of Married Persons Act, which repealed discriminatory provisions in formal law. Still, the co-existence with customary law provides inconsistencies in the application and the inheritance rules favour men (for example, the Act recognizes women's right to land, while customary law still denies this right).

However, females head 36 percent of all households and in practice have access to land on an equal basis as men; access to land typically gained through marriage. Women carry the responsibility for food security and subsistence agricultural production. Women and men engage equally work in agricultural production, but men are more

¹⁸ World Bank: *databank* (2003 numbers).

¹⁹ May et. al.: *Poverty and Inequality in Lesotho*.

²⁰ World Bank: *databank* (2008 numbers).

²¹ World Bank: *databank* (2009 numbers).

likely to have outside incomes; families who diversify their activities have higher incomes while female-headed households in rural areas are more likely to be poor.

Lesotho has one of the highest HIV/AIDS prevalence in the world; in 2011 World Bank data suggests that one in four adults carry HIV.²² HIV for the population aged 14-25 is almost three times higher for women; overall 26 percent of all females and 19 percent of all males are HIV carriers. The HIV epidemic in Lesotho has a devastating impact on rural households, leading to loss of productive capacity, marriage breakdown, and increased numbers of widows and widowers.

5.2 Biophysical Setting

Arable land as a percentage of Lesotho's total land area has been consistent since 1970 at approximately 10 percent, albeit with a small contraction.²³ Farming in Lesotho is tested by depleted soil, lack of irrigation, limited use of fertilizers, weak extension systems, inferior infrastructure, under-development markets, lack of land tenure security and lack of credit availability. Cereal production takes place on approximately 157,000 hectares, about half of arable land, but yields have been subject to significant swings over the past decade, both in terms of total production and average yields per hectare.

Lesotho's ecosystem is fragile and significantly influenced by climatic changes and weather related shocks, including heavy winds, snowfall, frost and hailstorms. For example, severe weather between December 2010 and February 2011, with accumulative rainfall higher than ever recorded, strong winds and hailstorms resulted in flooding, rockslides and severe run off. The total damage was estimated at US\$66.1 million – 3.2 percent of the GDP.²⁴ Droughts are common, occurring in three out of ten years and the annual rainfall is highly variable, with the bulk of rainfall falling between October and April. Devastating droughts have been extensive over the past two decades occurring in the periods of 1983-84, 1991-93, 1994-96 and 2002-04.

Agricultural practices, including extensive animal grazing contributes to the degradation of land. Degradation of land happens in a two-stage process: first organic matter rich surface is removed which leads to diminished nutrient and water retaining capabilities; second, deeper erosion. Erosion is significant across Lesotho; water storage capacity of the soil has become an increasing limiting factor to shallow soil depths. Erosion is estimated to cause the loss of 40 million tons every year.

Lesotho soils are generally classified as oxisols, characterized by soil erosion, low pH, and extreme deficiency of phosphorus, physical problems such as difficult land topography, and the impacts of the environmentally degrading soil degradation. Oxisols are very highly weathered soils that are found primarily in the inter-tropical regions of the world. These soils contain few weatherable minerals and are often rich in iron and aluminium oxide minerals. Most of these soils are characterized by extremely low native fertility, resulting from very low nutrient reserves, and high phosphorus retention by oxide minerals. Most nutrients in oxisol ecosystems are contained in the standing vegetation and decomposing plant material.

Land belongs to the nation, and is administered by the state or chiefs on behalf of people. There is thus no individual ownership of land or owners' titles– land is allotted

²² World Bank: *databank*.

²³ World Bank: *databank*.

²⁴ World Bank: Lesotho Overview.

through leasehold or allocation. While there are formal measures in place to register land leases, rural lands under agricultural production is managed under customary tenure systems with a central role for chiefs in land management and allocation.

Lesotho's forest coverage is fragmented; the climate and high elevation does not favour tree growth. The forest coverage is fragmented; forest coverage is challenged by local needs for cooking fuels. Forest coverage is an estimated 442 square km. The rural use of fuel wood for cooking and heating puts significant pressure on the existing coverage.

The areas of Lesotho ideally suited for horticulture production forms part of the northern foothills, which higher fertility of soils and better agricultural productivity. The foothills have higher rainfall than the lowlands and better access to water sources. There are modest areas with of plantation forests, mostly with eucalyptus and pines, but small patches of afro-montane forest. However, land is mostly cleared for agricultural use. While the area offers better farming conditions, it is challenged by the same problems all Basotho farmers face in terms of degradation of soils. Maize production is the dominant crop, but yields are low and declining. While growing conditions are better, erosion is a concern as it is elsewhere and gullies are spread across the landscape.

Water is relatively abundant in Lesotho, but in rural areas access is constrained by the livelihood context. The water availability provides a potential for Lesotho, but the ability to exploit the resources are modest due to topography and soil distribution relative to the position of suitable rivers. Available data provides little information on irrigation, use of fertilizers or pesticides, but qualitative evidence suggests that the use of such farming inputs are very low. Both pesticides and fertilizers are imported, and in 2004, the total value of fertilizer import as LSL9,204, while imports of organic chemicals and pesticides was LSL36,462.²⁵

5.3 Identified Stakeholder Issues

Stakeholders from across the horticulture value chain were consulted in the development of this ESMF, including several members of the Mahobong Farmers' Association, orchard employees, and the orchard manager, as well as project managers, government representatives and horticulture subject matter experts.

These stakeholder consultations found that during PSCEDI, gaps in communication, cumbersome reporting processes and unintended land issues caused complication for stakeholders. Action has since been taken to ensure that communication to orchard owners is clear and the roles of various actors (project consultants, PMU staff, GoL employees, horticulture coordinator) are well-defined to orchard owners. Additionally, farmer-level reporting has been shifted from two documents to one to ease the burden on pilot farmers. Additionally, the project continues to provide support to formalize land tenure, mitigate the risk of individual farmer expansion and develop a long-term project phase out strategy.

The project area is significantly rural and impoverished. Community-level tension was common during the early phases of PSCEDI, most notably between pilot farmers and surrounding communities. Given that additional communication with communities through quarterly meetings and access to the horticulture coordinator eased this tension, the ESMF will continue to allocate additional budget for community engagement.

²⁵ Kingdom of Lesotho: *National Profile of Chemicals Management Infrastructure 2010*.

6. Anticipated Environmental and Social Impacts

Despite low fertility, oxisols can be quite productive with inputs of lime and fertilizers. Micro-irrigation and water conservation techniques on smaller scale offer good potentials. Horticulture activities also provide potentials to prevent the decline of soil productivity and erosion.

Given the small scale of the project, the impacts are expected to be limited and mainly positive. However, as the project changes the community dynamics for the establishment of a project orchard, and introduces pesticides, fertilizers and irrigation, the framework tracks potential impacts and management to ensure distribution benefits and protection of environment. Since it is expected that the project will chart the road for a more substantial scale up of horticulture production in Lesotho, the ESMF is designed for GoL to use post PSCEDPII.

PSCEDPII horticulture support expected impacts include:

- Employment and poverty reduction:
 - Increased monetary incomes for members of the farmer's association;
 - Supplementary incomes for workers employed by the association;
 - Related government incomes from activities: taxes and transfers;
 - Increased food security and nutrition.
- Agricultural development and skills:
 - Empowerment of farmers;
 - Skills development on a high value, niche production;
 - Diversification of agricultural production;
 - Establishment and strengthening of market linkages;
 - International certification procedures (GLOBAL G.A.P.) enabling exports.
- Environment:
 - Increased environmental awareness through improved production processes, integrated pest management;
 - Water resource conservation practices;
 - Improve soil conservation and erosion prevention.

As horticulture increases and contributes to rural incomes, the project could have spin off effects on health and education.

However, there are potential environmental and social risks associated with the project that requires careful management and training. Environmental risks from use of agro-chemicals are particularly damaging to children and pregnant women, while social cohesion may be uprooted due to changes in production and income distributions. Potential problematic impacts include:

- Misuse of agro-chemicals and inadequate pest management;
- Occupational hazards (inadequate washing, drifting of fumes etc.);
- Water overuse and pollution;
- Subsidies for initial project participants not leading to additional production due to lack of support or ability to get projects off the ground;
- Program benefits being captured by larger landholders without any spin off effect on rural economy;

- Poor control of soil erosion;
- Project participants centred in areas with better infrastructure leaving marginalized communities, e.g. with lack of road infrastructure unable to benefit from development;
- Increase in traffic (dust, noise, health/safety);
- Pressure on land, relative values – non-transparent land takings;
- Potential influx to community due to economic development
- Inadequate development of irrigation infrastructure which could lead to alteration of the hydrological regime, for example, small dams development;

To ensure strong beneficiary support and management of potential adverse impacts, the ESMF includes monitoring arrangements for the following project activities:

- Impact of change in production practices and land use management;
- Environmental impacts from use of fertilizers and pesticides;
- Resource use and depletion;
- Access rights by community members;
- Land tenure;
- Occupational health and labour conditions;
- Benefit distribution and developmental impact;
- A communications and outreach plan that will be budgeted in the project.

7. Lesotho Policies, Legal and Administrative Framework

7.1 Agriculture

Lesotho does not have legislation specific to agriculture, but the government sees commercial farming as one of the important avenues for increasing agricultural production and household food security. In addition, Lesotho Vision 2020 seeks to promote:

- Sustainable crop production intensification and diversification;
- Increased production of fish and fish products from sustainable expansion and intensification of aquaculture;
- Forests to ensure biodiversity and genetic resources; promote climate change mitigation, adaptation and rehabilitation of degraded lands;
- Sustainable land management;
- Access to and sharing of knowledge improve competitiveness, diversify into new enterprises,
- Increased value and meet market requirements for natural resource management;
- Rooting out causes of hunger, food insecurity and malnutrition.

7.2 Environment

The Environment Act of 2008 provides the framework for protection and management of the environment, and the sustainable utilization of natural resources. The Act establishes environmental units in each ministry to mainstream environmental policies and the National Environmental Council (NEC) and Environmental Coordinating Committee, both of which coordinate environmental issues between ministries.

The Act provides guidelines for when Environmental Impact Assessments are needed and what they must address, auditing and monitoring. Specifically, the Act notes that the Director of the ministry must issue guidelines of practices to conserve soil, prohibition of soil degradation practices, and monitor soil degradation. The Act provides the framework for penalties for violations, including activities that pollute water sources. Finally the Act makes provisions for pollution limits and banned substances, including pesticides (banned pesticides, see Appendix 5).

7.3 Land

In accordance with the constitution, *“all land in Lesotho is vested in the Basotho Nation.”*²⁶Under the constitutional provisions the right to allocate, grant, terminate or restrict land is held by the King. Lesotho therefore does not provide for private ownership of land, but right of use.

The 2010 Land Act provided a new framework to manage land administration, allocation and expropriation. In addition, the Act created land courts, measures to settle land disputes and established land revenues. In accordance with the Act, foreigners can only hold land in partnership with Lesotho nationals.

In urban areas, the Lesotho Land Administration Authority oversees allocation of land, while in rural areas local commissioners manage allocation. However, rural lands are

²⁶ *The Constitution of Lesotho.*

mainly part of the customary systems – land used for agricultural production is allocated by chiefs or through inheritance overseen by the chief's authority. Allocation through local commissioners happens typically only for formal development of businesses or when a family builds a modern dwelling of significant value.

7.4 Water

Ministry of Natural Resources Water and Sanitation Policy (2007) includes the outline for quality, monitoring and quantity. However, it does not consider agricultural uses and nor does it provide environmental standards.

7.5 Agro-chemicals

A GoL bill titled Hazardous and Non Hazardous Waste Management was drafted in 2008, but for unknown reasons it was not passed into law, a fate similar to the 1986 bill titled Pesticides Management. The governance of agro-chemicals such as pesticides and fertilizers is fragmented with responsibilities split between a number of different ministries overseeing environment, agriculture, environment and labour.

7.6 Labour

The Labour Code provides the national labour, safety and health requirement for the workplace. The Code ensures a regularly adjusted minimum bill, enables oversight of all workplaces to the Labour Commissioner. Under the oversight of the Commissioner, the Code requires employers to keep track of all accidents or dangerous occurrences and notification to the Labour Commissioner.

7.7 HIV/AIDS

As a supplement to the Labour Code a special legal notice on HIV/AIDS was published in 2010 to protect against discrimination and provide guidance to employers. The guideline seeks to prevent any form of discrimination in the workplace, but also sets a standard for information and education that must be shared in the workplace. The code obliges employers of any size to provide comprehensive and gender sensitive programmes aimed at prevention and treatment. Employers are for developing a policy which includes the following provisions: education and awareness programme, promotion of safe sex (distribute condoms), facilitation of access to care and prevention of discrimination in the work place. As a supplement to the Labour Code, the Labour Commissioner oversees these requirements.

7.8 Patent Law

The business plan for the horticulture component suggests that the establishment of fruit tree nurseries in Lesotho may require royalty payments to patent holders of selected varieties. However, Lesotho's patent system does not extend patent rights to plant varieties, and no such extension is required by any international treaty that Lesotho is a member of. The WTO TRIPS agreement does require most countries to extend sui generis protection to plant varieties, but as a Least Developed Country (LDC) Lesotho is not yet bound by this provision.²⁷ Barring domestic law, there would be no obligation to pay royalties for the use of any plant varieties. The international protection

²⁷ LDCs are exempt from such requirements under article 27 of the WTO TRIPS agreement. See http://www.wto.org/english/news_e/news13_e/trip_11jun13_e.htm.

regime in Lesotho pertains to industrial property and copyright.

Lesotho is partner to the International Treaty on Plant Genetic Resources for Food and Agriculture, which pertains to protection of genetic resources, traditional knowledge and plant variety protection.

7.9 International Conventions and Treaties Signed by Lesotho

Lesotho is signatory to a number international conventions and treaties with relevance to the horticulture components of PSCEDPII. The treaty content is largely reflected in Lesotho’s legal code. However, while Lesotho is signatory to a number of conventions which limits and prohibits movement of hazardous wastes, included agro-chemicals, Lesotho currently does not have any hazardous waste disposal capacity.

Table 3: Relevant Treaties of Conventions Signed by Lesotho

Name of treaty/convention	Year signed
Africa Convention on Conservation of Nature and Natural Resources	1968
Vienna Convention for Protection of the Ozone Layer	1994
Montreal Protocol on Substances that Deplete the Ozone Layer	1994
United Nations Framework Convention on Climate Change	1995
Convention on Biological Diversity	1995
United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	1996
Basel convention on Transboundary Movement of Hazardous Wastes and their Disposal	2000
Kyoto Protocol on Climate Change	2000
Cartagena Protocol on Biosafety	2001
Convention on International Trade in Endangered Species of Wild Fauna and Flora	2003
Treaty on Plant Genetic Resources for Food and Agriculture	2006
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2008

7.10 Administrative Framework

Agricultural support services in Lesotho are provided by a number of Government agencies, including the Ministry of Agriculture and Food Security (MAFS), the Ministry of Forestry and Land Reclamation (MFLR) and the Ministry of Trade and Industry, Cooperatives and Marketing (MTICM).

MTICM is expected to initiate the development of a strategy to engage private sector investments in value added facilities and support industries.

The Ministry of Tourism, Environment and Culture (MTEC) oversees environmental protection agency, while the National Environmental Secretariat (NES) carries the administrative duties and is the focal point for ministerial coordination of environmental issues. NES is also tasked with ensuring Lesotho’s compliance with international convention and treaties.

As fruit production increases, and post PSCEDPII, NES is expected to coordinate and address issues related to horticulture, including on orchard management of agro-chemicals, soil and water management. It will be particularly relevant to coordinate such issues with MFLR, MAFS and MTICM in order to have integrated planning that

encourage sound environmental and social management and ensures new market entrants in the sector.

The Ministry of Labour and Employment oversees occupational health and pesticide safety issues with regard to the use, storage and handling at workplaces.

The Ministry of Natural Resources provides overall protection and management of natural resources, relevant specifically to the ministries oversight of water resources.

The Ministry of Forestry and Land Reclamation oversees forestry including fruit tree nurseries, soil and water conservation, in part to address land degradation issues.

For the purpose of the PSCEDPII, the World Bank supports a Project Management Unit (PMU) which, given the overarching focus of PSCEDPII, is hosted under MTICM.

8. World Bank Safeguard Policies

8.1 Environmental Assessment (OP/BP 4.01)

The objective of OP 4.01 is to ensure that World Bank supported projects are environmental sound and sustainable. The policy is triggered if the project is anticipated to have potentially adverse impacts in its area of influence. Depending on the project, and nature of impacts a range of instruments can be used: Environmental Impact Assessment (EIA), regional or sectoral Environmental Assessment (EA), Strategic Environmental and Social Assessment (SESA), environmental audit, hazard or risk assessment, Environmental Management Plan (EMP) and Environmental and Social Management Framework (ESMF).

The PSCEDPII is rated as a category B project and supports a number of unknown sub-projects or components therefore this ESMF is required.²⁸ Specifically, for the horticulture subcomponent, the specific sites have yet to be selected and this will be done during the first phase of the implementation. Institutional responsibilities are outlined in section 11 and the specific framework to oversee activities is provided in Appendix 2.

8.2 Natural Habitats (OP/BP 4.04)

OP 4.04 recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The World Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species. The policy is triggered if the project is expected to cover areas of natural habitat in order to protect, maintain or rehabilitate natural habitats and their functions.

²⁸ Category B implies that project impacts are site-specific and easy to manage; few if any of them are irreversible; and in most appropriate cases mitigatory measures can be readily designed.

The land that will be included in the project is already converted agricultural lands and the policy is therefore not triggered.

8.3 Pest Management (OP/BP 4.09)

The policy is triggered if procurement of pesticides is envisaged (either directly through the project or indirectly through on-lending); if the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may lead to substantially increased pesticide use and subsequent increase in health and environmental risks; and projects that may maintain or expand present pest management practices that are unsustainable.

With respect to the classification of pesticides and their specific formulations, the Bank refers to the World Health Organization's Recommended Classification of Pesticides by Hazard and Guidelines to Classification (Geneva: WHO 1994-95). The following criteria apply to the selection and use of pesticides in Bank-financed projects:

- Have negligible adverse human health effects;
- Be shown to be effective against the target species;
- Have minimal effect on non-target species and the natural environment.
- The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies;
- Use must take into account the need to prevent the development of resistance in pests.

At a minimum pesticide use and management should comply with FAO's Guidelines for Packaging and storage of Pesticides, Guidelines on Good Labelling Practice for Pesticides, and Guidelines for the Disposal of Waste Pesticide Containers on the Farm.

Under PSCEDP, GLOBAL G.A.P. oversaw pest management and monitoring protocol. Given the very limited scope of PSCEDP, the project did not trigger OP 4.09. However, with the expansion to 35 hectares under PSCEDPII the policy is triggered. The management principles required are outlined in section 10.

8.4 Indigenous Peoples (OP/BP 4.10)

The objective of this policy is to: (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits. The indigenous people's operational policy is triggered if a project affects indigenous peoples, defined as groups of distinct, vulnerable, social and cultural groups.

There are no indigenous groups identified in the project area, nor in Lesotho as a whole, wherefore the policy is not triggered.

8.5 Physical Cultural Resources (OP/BP 4.11)

Under OP 4.11 World Bank projects must screen land for the existence of physical cultural resources, which can be movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological,

paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

Land involved in the project should be subject to screening, but may not be considered for inclusion in the project if physical cultural resources will be affected.

8.6 Involuntary Resettlement (OP/BP 4.12)

The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure. This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter, loss of assets or access to assets, loss of income sources or means of livelihood, whether or not the affected people must move to another location.

Activities under the project will avoid any potential involuntary resettlement impacts and will ensure that if land acquisition is necessary, it will be carried out in a fully voluntary nature. The project will not fund the acquisition of sites that will result in involuntary resettlement, and will appropriately screen potential sites accordingly. The project will only include existing agricultural lands where there is no loss of land, assets. Fencing established for the orchards will be designed to ensure continued community access to fields and footpaths.

OP 4.12 does not apply to voluntary, legally recorded market transactions in which the seller is given a genuine opportunity to retain the land and to refuse to sell it, and is fully informed about available choices and their implications. In the case of voluntary land donations, the Borrower should demonstrate that: (a) the potential donor or donors have been appropriately informed and consulted about the project and the choices available to them; (b) potential donors are aware that refusal is an option, and have confirmed in writing their willingness to proceed with the donation; (c) the amount of land being donated is minor and will not reduce the donor's remaining land area below that required to maintain the donor's livelihood at current levels; (d) no household relocation is involved; (e) the donor is expected to benefit directly from the project; and (f) for community or collective land, donation can only occur with the consent of individuals using or occupying the land. The Borrower will maintain a transparent record of all consultations and agreements reached.

8.7 Grievance Redress Mechanism

In the Grievance Redress Mechanism (GRM), complaints about environmental and social performance of the proposed sub-project during the construction and operation phases shall be handled by the horticulture coordinator. Grievance and complaints will be reported in writing (even if delivered verbally) and addressed through collaboration with the PMU, GoL and The World Bank. All complaints received in writing (or written when received verbally) from the sub-project affected people or entity will be documented and shall be acted upon immediately.

Those seeking to report grievances may contact the following parties:

Makali Nathane, Horticulture Coordinator (Email: mnathane@psc.org.ls)
 Chaba Mokuku, PMU (Email: cmokuku@psc.org.ls)
 World Bank Maseru (Telephone: +266 22-321-480)
 World Bank Headquarters (grievances@worldbank.org)

Communities and individuals who believe that they are adversely affected by a Bank-supported project may submit complaints to existing project-level grievance redress mechanisms or the Bank’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 Bank’s independent Inspection Panel, which determines whether harm occurred, or could occur, as a result of the Bank’s noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the Bank’s attention and the Bank management has been given an opportunity to respond. For information on how to submit complaints to the Bank’s corporate GRS, please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

8.8 Other Operational Guidelines

Other operational guidelines include: Forests (OP/BP 4.36, triggered if project seeks to harness potential of forests), Safety of Dams (OP/BP 4.37, triggered for new and existing dams to ensure design, construction and safety measures), Projects on International Waterways (OP/BP 7.50, triggered in projects that involve international waterways) and Projects in Disputed Areas (OP/BP 7.60, triggered where disputes exist between neighbouring states). None of these guidelines bear any relevance to expected PSCEDPII activities.

Table 4: Summary of World Bank Safeguards Triggered by Horticulture Component

	Yes	No
Environmental Assessment (OP/BP 4.01)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Natural Habitats (OP/BP 4.04)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pest Management (OP/BP 4.09)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indigenous Peoples (OP/BP 4.10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Physical Cultural Resources (OP/BP 4.11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involuntary Resettlement (OP/BP 4.12)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Forests (OP/BP 4.36)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams (OP/BP 4.37)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways (OP/BP 7.50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects in Disputed Areas (OP/BP 7.60)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

9. Environmental and Social Screening

The horticulture activities cover a yet unknown geographic area, and requires careful management of environmental and social impacts. The Environmental and Social Screening Form in Appendix 1 provides the overview of actions to be taken depending on the conditions for the project. However, this does not replace the framework in section 11 or monitoring arrangements to ensure that the project adheres to national legislation and World Bank safeguard policies, provided in section 8.

While Lesotho’s policy and legal frameworks, and the World Bank safeguards policies largely overlap in terms of intent, the governments low capacity and lack of experience with horticulture means that there is yet little developed capacity in government agencies to provide adequate oversight or support for project activities. The project will

build government capacity, but the PMU will ensure screening of sub-projects and maintain files for public view. To ensure capacity building the PMU will partner with government agencies during the screening process to build towards a full hand-off towards the end of the project.

The Environmental and Social Screening will be undertaken by qualified reviewers once potential sub-project sites are identified (see Appendix 1 for qualifications of required). The screening includes a short description and screening for any potentially adverse impacts, which may either result in rejection of potential project sites or trigger additional work to develop mitigating strategies for identified adverse impacts. The PMU is required to keep all records of screening material and reports for public view if requested.

Table 5: Examples of Adverse Impact in Sub-project Areas

Sub-project site:	Example of adverse impact	Potential mitigation
Impact community footpaths	A number of farmers will have to add 15 minutes to walk about the fenced project area to get to their plots.	Consult with community to ensure acceptance of mitigation, options include: gates or construction of fences that allows access to community to traverse project site
Is in an area with erosion and significant top-soil loss	There is significant erosion in the project area or adjacent. Unclear how it may affect project site in the future.	Study site to determine whether it is possible to mitigate and prevent further erosion. Ensure that project does not contribute to erosion in any way.
Is located in a water stressed community	Water requirement for project will likely impact water availability for adjacent community.	Develop additional water sources, engage in rainwater harvesting, or potentially reject site.

10. Pest Management

Horticulture production under PSCEDPII will continue to subscribe to **integrated pesticide management principles** overseen by GLOBAL G.A.P. While PSCEDPII activities are limited to 35 hectares and thus not a substantial increase in use of pesticides, the potential scale up through private sector participation makes it important to establish sound practices, competence and knowledge. There is a strong potential for GLOBAL G.A.P. procedures to be streamlined into the currently relatively weak GoL regulatory framework.

The aim of the project is to introduce horticulture in Lesotho in an environmentally friendly manner which seeks to build on natural control mechanisms and judicious use of agro-chemicals in pest control. Orchards will rely, to the extent possible, on non-chemical measures to keep pest population low. The use of agro-chemical, if necessary, should be closely measured to avoid adverse effects.

The project will ensure that soil tests and leaf analysis are conducted to safeguard the environmental health. Furthermore, application should be based on soil tests and leaf analysis to determine the levels required. Given the lack of knowledge with horticulture and little use of agro-chemicals in farming currently, a crucial part of the project is to build capacity. This will happen through close collaboration with GoL agencies, but specifically through training of project participants (see also section 11.2). Uncontrolled use of agro-chemicals could result in contamination of water resources, affect vegetation, yields, wildlife and community health. Water tests should specifically track nitrogen traces

GLOBAL G.A.P. provides guidance to small and large scale farms. For the small scale farms, with less capacity, GLOBAL G.A.P. has developed guidance for farmers with limited literacy and financial means. The GLOBAL G.A.P. program covers all aspects of pest and pesticide management required under the World Bank's OP 4.09.

In accordance with GLOBAL G.A.P. procedures, orchard management will include the following aspects:

- **Preventive measures.** The site selection should take into consideration potential pests. Once the orchard is under establishment, farmers should work to increase organic matter content and plan only pest free plants. Effective weed control can help prevent potential tests, and equipment must be disinfected to prevent infection (e.g. pruning saws).
- **Ongoing monitoring.** Orchards should ensure daily inspections, learn to identify potential pests and set pheromone traps. All observations should be duly noted to assist subsequent actions.
- **If treatment is necessary.** Orchards should set traps and seek to engage natural enemies. If this is ineffective, use of non-chemical products and least toxic products should be prioritized. Weeds should be manually controlled rather than managed through use of agro-chemicals. Once agro-chemicals are applied, orchards must clearly post warning signs to indicate application during the re-entry interval period. The use of signage should be shared with surrounding communities. Lastly, orchard owners/managers must ensure that all application machinery and equipment is in working order, and test equipment annually.
- **Management of pesticides/agro-chemicals.** Only products suitable for the target crop may be used. The horticulture coordinator will assist with suitable products that comply with GLOBAL G.A.P, Lesotho and World Bank OP 4.09 standards. Orchards must ensure that there is adequate protective clothing, incl. masks, boots, gloves (budgetted as part of project funds, LSL160,000/annually). All purchases and use must be tracked.
- **Storage requirements.** All agro-chemicals must be stored separately from other facilities. Liquids and powders should be separated and storage facilities must be protected against theft (guards/locks). If materials are stored in a shed, the shed must be built with adequate ventilation to prevent concentration of fumes. The storage facility must have clear warning signs, and all materials should be stored in clearly labeled, original packaging. Orchards must have adequate measuring equipment or scales to ensure correct application. There should be close proximity to washing facilities and tools to clean potential spillage. Orchard owners or managers are responsible for keeping a stock inventory which is updated at least every three months.
- **Training and safety.** Everyone working in proximity to agro-chemicals should receive training, not just a few workers who may directly handle pesticides. The PMU should keep track of everyone who have received required training, and issue certificates. Orchard owners must keep track of employee training locally. On each orchard, at least one person, ideally more, should receive training in first aid and orchards should have a first aid kit, which includes equipment to wash eyes. The project budget for training is LSL385,000 per annum.

GLOBAL G.A.P. requires adequate record keeping for orchards to receive certification, which includes detailed recording of use of agro-chemicals, including: location/data, product used, reason for use and quantity used, and person applying the agro-chemical.

11. Environmental and Social Management Framework

Under proper project management, potential adverse environmental and social impacts from the project are likely insignificant, while there are strong potential for generation positive impacts. The ESMF provides the management framework for the project, but there is a need for a coherent Lesotho government policy to continue to support fruit orchard development, and ensure strong environmental safeguards in production. Government assistance and oversight is currently weak and fragmented.²⁹ Long term plans should be put in place as part of PSCEDPII to ensure that GLOBAL G.A.P. or similar national standards can be enforced to enable the continued export both from farmers included in activities and farmers who develop fruit orchards as spin offs from the project. A detailed phase out of assistance and project twinning arrangements with relevant government agencies, which may include developing public private partnerships, could be used to establish needed capacity. This could include certification of a Lesotho laboratory to serve the growing needs of commercial horticulture.³⁰

As part of the site selection, soils should be tested to determine suitability, besides identification of ideal climatic zones. For example, phosphorus soil test values between 12-20 ppm are considered adequate for tree fruit establishment and production. Prior to planting, through soil testing, nutrient levels and pH levels should be noted for adequacy. Lime can be added to raise the soil pH levels where it is below 5.5. Since phosphorus, potassium and lime do not move readily through the soil, pre-plant applications are generally the most effective. The same is true of micronutrient boron, needed for health apple and cherry growth. Agrochemicals containing these (and other nutrients) should be effectively worked into the soils. Furthermore, the target pH before establishing a new orchard is 6.5 on sandy soils and 6.0 on clay soils. Use of dolomitic lime (high in magnesium) on soils low in magnesium is recommended. Rates of application vary with soil type and initial pH.

Orchards will rely, to the extent possible, on non-chemical measures to keep pest population low. When agro-chemical use is necessary, it should be used in a manner that minimizes adverse effects on beneficial organisms, humans, and the environment. Furthermore, application should be based on soil tests and leaf analysis to determine the levels required. As there is a lack of experience in Lesotho with agro-chemical management, training (see 11.2) is essential. Inadequate use of agro-chemicals could result in contamination of water resources, affect vegetation, yields, wildlife and community health. Water tests should specifically track nitrogen traces.

Erosion is a particular concern in Lesotho and should be closely monitored especially during tree establishment. Mitigating measures must be put in place depending on location. Such measures should not only protect against normal precipitation, but be planned for erosion prevention during heavy rainstorms.

²⁹ The environmental legislation and implementation in Lesotho is poor and focuses on coercive measures rather than preventive. Lack of qualified staff, resources, monitoring equipment weak administration and organizational structures and institutional conflicts leaves environmental work in Lesotho fragmented. Labour code enforcement is similarly challenged by inadequate human resources.

³⁰ According to the 2010 *National Profile of Chemicals Management Infrastructure*, Lesotho does not have any accredited laboratories that can perform the analysis needed in the project and all involved ministries have very limited capacity to monitor specific projects.

The volume of water required for the orchard should not pose any impact on surrounding communities unless the community is already water stressed, as water is generally abundant. However, while the orchard will rely on drip-irrigation, pumping or gravity flow infrastructure will likely be developed. The volume and quality of water should be closely monitored. For example, high iron content could lead to leaf damage. Given that the orchard will be located on existing farmland, the expectation is that the orchard development will have no impact on surrounding production, and measures are out in place to ensure that it does not have any impact on surrounding community's water demand.

The ESMF matrix (Appendix 2) provides measures to consider non-point runoff from orchard-applied fertilizers (organic and inorganic) and pesticides, but also water use, soil type, slope, watersheds, and groundwater relate to surface runoff, drainage, and persistence in and leaching through the soil profile. Lesotho institutions lack capacity to effectively monitor environmental impacts and the PMU will therefore be in charge of project monitoring to establish precedence and access to services, such as laboratories.

In addition, the horticulture activities should have strong weather protection measures in place, including hail nets and fences to protection from extreme weather that could cause tremendous damage to trees and crops.

The PMU oversight is supported by GLOBAL G.A.P., which based on an annual fee, will oversee environmental standards. The interventions by GLOBAL G.A.P. will also ensure that fruit production is compliant with international standards required for export. Participation in Global Gap also ensures proper handling of potential surplus pesticide or fertilizer, as currently Lesotho lacks adequate legislation on hazardous waste.

As part of the preparation for the orchard development under PSCEDP, the prospective participants must ensure clear long term leases or lease arrangements with lease holders. The PMU should assess all leases to ensure that there are no conflicts, including that participating farmers pays a suitable compensation where long terms arrangements with lease holders where this is applicable. The local chiefs are important in that they allocate land and the PMU therefore needs to clear leaseholders with chiefs, while at the same time balance the chiefs potential (financial) interest in the project.

The ESMF matrix (Appendix 2) provides a number of measures to monitor and mitigate potential social issues. These include mainstreaming of gender and adherence to labour law. In addition the matrix establishes a few indicators to enable the project to monitor the impact amongst the direct participants and the surrounding community. These include changes in health status, incomes and educational opportunities pursued.

An environmental and social review will be conducted midterm of the project to ensure that potential adverse impact has either been avoided or effectively mitigated.

Based on experience in the pilot horticulture activities under PSCEDP, two measures should be changed as part of PSCEDP:

- Under PSCEDP orchard owners kept a Blue Book to track production, inputs required etc. The format was difficult for owners to use and in many instances overlapped with requirements by GLOBAL G.A.P. Under PSCEDP the **Blue Book and the GLOBAL G.A.P. tracking requirements should be merged** and provided in a format that is more adapted to farmers skills.

- Government officials, PMU staff and consultants have visited the pilot farms under PSCEDP activities. Participating orchard owners appeared at times confused to advise that was volunteered, and standards they were required to comply with. Under PSCEDPII a **simple communications plan** should be developed in collaboration with the future participating farmers to ensure that everyone understands the actual requirements under the project. A separate budget shall be allocated for this communications plan.

11.1 PMU Responsibilities

The PMU has the overall responsibility for implementation and monitoring of compliance in the project as the decision-making authority, with oversight of plans and budgets. Given the project's tenure and PMU staffing consistency, the PMU is familiar with the World Bank's safeguard policies. The PMU horticulture coordinator is in charge of overseeing the operations of the orchards and monitoring the implementation of the ESMF. In addition, PMU oversight responsibilities are supported by GLOBAL G.A.P., which ensures production compliance with environmental norms. The PMU will report to and be guided by MTICM and receive technical support from MFLR. The PMU is also the interface with the World Bank. The PMU may engage local or international consultants to provide expert input as needed.

A critical lesson from Phase 1 of the horticulture project was that to achieve commercial success, production and marketing activities required professional management, both with respect to on-farm management and marketing of products. In this regard, the management of commercial production was initially subcontracted to a professional management company with on-farm technical and marketing experience. Now there are enough local people trained in these areas that a Basotho farm manager has been hired with the following responsibilities:

- Overall administration of commercial production activities;
- Management of commercial orchards;
- On-farm technical and management support;
- Training and capacity building of participating farmers;
- Training to ensure participating farms continue to be GLOBAL G.A.P. certified;
- Provision of necessary post-harvest handling support to minimize on and off-farm losses and waste
- Provision of capacity building and training to extension service officers from all relevant government agencies in target areas; and
- Support to the implementation of the ESMF, in conjunction with the PMU horticulture coordinator, who is ultimately responsible for its implementation.

11.2 Orchard Owners' Responsibilities

Orchard owners will be offered training that ensures their ability to manage large commercial orchards on a day-to-day basis in compliance with the ESMF. The owners have the primary responsibility for oversight of work on the orchards, but will be provided with significant technical support, including from a hands-on horticulture coordinator.

The orchard owners are expected to form a dedicated producer group to promote information sharing among sector participants and represent growers in discussions with ministries and others to develop programs and services that support sector

development. In addition, direct beneficiaries under PSCEDPII are required to assist in demonstration and training of future entrants.

11.3 Horticulture Coordinator's Responsibilities

The horticulture coordinator in the PMU will provide regular oversight and advise in use of agro-chemicals, water quality and quantities, yields, erosion and labour oversight. The coordinator is expected to spend the bulk of working hours in the field with hands-on work to support the orchard development. The coordinator should work directly with the District Agricultural Office (DAO) to provide support to the farmers either directly or through the short-term consultants who provide discrete technical assistance. The horticulture coordinator specifically should:

- Work with relevant government agencies to develop training to build capacity of participating farmers, workers and communities;
- Organize farmers into farmers' association and eventually transfer them into corporate entities;
- Provide on-farm technical and management support;
- Advise on marketing activities to ensure that marketable crops are sold at competitive prices that maximize the income earning potential of participating farmers;
- Provide support for all necessary post-harvest handling support to minimize on and off-farm losses and waste, and;
- Provide capacity building and training to extension service officers from all relevant government agencies in target areas. Implement the ESMF.

In addition, the horticulture coordinator will provide guidance on association and community engagement to ensure social cohesion. This includes, ensuring that the orchard association members meet regularly and that community engagement takes place at least quarterly. The horticulture coordinator will undertake on-going engagement with communities to monitor impacts, tension, and the issue of envy when some get extra support and guarantees while others don't. The horticulture coordinator will also serve as the first-tier mechanism for complaints and grievances. He or she will be responsible for receiving, addressing, and keeping record of complaints and feedbacks. Aggrieved persons or parties may also pursue redress through the World Bank's Grievance Redress Mechanism (GRM), detailed in section 8.7.

The horticulture coordinator will use the reporting framework provided in Appendix 3.

11.4 GLOBAL G.A.P. Responsibilities

Subscription to and certification by Global G.A.P. ensures not only compliance with environmental norms, but also potential international export markets. GLOBAL G.A.P. officers provide an extensive inspection of participating farms annually for US\$4,800/year. The inspection covers agro-chemical use and residue, storage, labelling, equipment, day-to-day oversight (GLOBAL G.A.P. protocol kept by orchard owners), water use and contamination, crop and tree damage/management. Certification is a larger burden for small orchards, while larger orchards might see the certification as a marginal cost. Certification must be renewed annually.

While GLOBAL G.A.P. certification is perhaps costly, it ensures simultaneous compliance with World Bank safeguards and national environmental legislation. Furthermore, it provides access to new technologies and best practice orchard management.

All the orchards under management are currently Global GAP certified.

11.5 GoL Responsibilities

PMU activities are organized under the MTICM, which provides oversight. MAFS will provide technical support through the participation of and coordination with district agriculture officers. MTEC has the overall responsibility for to enforce environmental regulations and provide testing.

MAFS is expected to play an important role in strengthening and expanding the range and quality of extension support services required by farmers to engage in tree crop production.

However, as commercial horticulture is new to Lesotho, the project will ensure compliance through private testing by independent labs to monitor chemical residues, soil nutrition and water quality, and partner with government agencies to ensure capacity building. In the medium- to long term, the MAFS will maintain this oversight supported by the MTEC.

Longer term, upstream activities are expected to include processing of crops. Lesotho National Development Corporation (LNDC) can assist in attracting investors to the sector. LNDC manages a number of warehouses throughout Lesotho, which may be converted into small pack houses for primary processing, handling and sorting activities. Processing facilities may also be located in the existing warehouses.

11.6 Training and Development

A number of capacity building activities are supported under PSCEDPII to ensure sound management of agro-chemicals, business acumen and general awareness raising. Given the high level of illiteracy, particularly in rural areas, training must be innovative, hands on and delivered in SeSotho. All training and consultations conducted should mainstream occupational health issues, HIV/AIDS awareness and gender. Some training activities will target orchard owners, while others should engage surrounding communities. Broader engagement and consultation with communities is a proactive measure to ensure community cohesion and buy-in, track benefits and prevent discontent from the outset. Early community engagement may also enable future local development of new orchard associations post-PSCEDPII.

The specific training needs will be identified and developed by the horticulture coordinator with input from orchard owners, GLOBAL G.A.P. agents and the PMU.

GoL is expected to support the expansion of qualified and accessible extension services, support improved credit facilities for commercial farming, develop statistics and benchmarking of the horticulture sector and continue to build infrastructure to support rural development (roads, electricity and water access).

In addition, the PMU will receive training on managing environmental and social issues and implementing the ESMF, as well as on project-specific ESMPs, participatory governance and stakeholder engagement, and strategic environmental and social assessments.

11.6.1 Training of Orchard Owners and Workers

Training to owners and workers should include basic fruit orchard farming techniques, but specifically focus on: i) soil and water conservation; ii) planting and pruning; iii) pest identification and pesticide handling; iii) fertilizer usage; and iv) preventive management (netting, fencing).

In addition, orchard owners will receive training in farm management, which will specifically focus on business planning and GLOBAL G.A.P. management.

With lack of facilities and weak regulation in Lesotho, it is particularly important that all participants are training in the use and management of pesticides procurement, storage (ventilation, prevention of leaching, stock management etc.), and use and understand the potential risks associated with use. The training should be practical in nature in the use of protective gear, understanding of risks to surrounding areas (e.g. drift of spraying).

While only some workers might be responsible for agro-chemicals handling, it is essential that all workers have basic knowledge.

To develop the orchard owners association the PMU will share standard association rules and provide facilitation in order to develop procedures and rules. It is particularly important to have detailed discussions as the association is established in relation to benefit sharing and establish provisions that are fully accepted by all members to prevent future discontent amongst the members.

By receiving the support through the project, the orchard owners commit to participate as a demo demonstration farm for future farm owners interested in orchard development.

11.6.2 Community Training and Consultation

The project will engage with community members, not just the community leadership. The engagement may lead to changed procedures and benefit distribution as community members might offer alternative and viable ideas that improves project component. However, at the very least, the engagement with communities should serve as a regular grievance mechanism and provide a forum for sharing basic knowledge on the project. Community training and consultation is expected to be a regular event, headed by the horticulture coordinator on a quarterly basis. These meetings should ensure:

- Broad understanding of benefits offered in the project, including specific benefits provided from PMU;
- Understanding of pesticide use and warning systems used. This should include a warning system developed between community members and orchard owners on precautions to be taken during application and accepted notification time lines and/or signals;
- Expected outcomes of the project and ability for community members to benefit (whether or not directly through existing activities);
- Grievance procedures: whom to contact and what to expect.

Appendix 1: Environmental and Social Screening Form for Sub-projects

This Environmental and Social Screening Form is designed to assist in evaluation of prospective sub-project activities associated with PSCEDPII.

This Form is to be used by reviewers to identify environmental and social impacts. If impacts are identified, the form provides a short description of additional safeguards work required, if any.

The reviewer should:

- Have a solid understanding of environmental and social screening;
- Obtain baseline information of the proposed area which includes financing, land use changes, use of agricultural inputs and required labour;
- Provide an outline of proposed project activities;

The PMU must keep records of all screening material.

Section 1: Environmental and Social Baseline for Project Area

The reviewer should provide brief overviews of the baseline information on the following:

Geographic location:

- Description of location;
- Site map.

Land resources:

- Topography and geology;
- Soils and soil nutritional baselines, erosion.

Water resources:

- Type of water resources (ground water, surface water);
- Water quality;
- Water quantity;
- Competing uses of water resources.

Native habitat:

- Flora;
- Fauna;
- Sensitive habitats.

Climate:

- Temperature;
- Rainfall;
- Record of severe weather impacts.

Socio-economic baselines:

- Primary land uses;
- Main economic activities;
- Income levels;
- Children, youth and gender;
- Health profile.

Section 2: Screening framework

Table 6: Screening of Subproject Inclusion

Will sub-project implementation impact/lead to:	Response and action to be taken	
	Yes	No
National parks	Project area will not qualify for inclusion in project.	Follow ESMF monitoring guidelines.
Areas with rare or endangered flora/fauna	Project area will not qualify for inclusion in project.	Follow ESMF monitoring guidelines.
Significant erosion or top soil erosion	Can the erosion be mitigated through project investments? EMP required. If there is no effective mitigation, project area will not qualify for inclusion in project.	Follow ESMF monitoring guidelines.
Project area is along rivers or significant water sources – within ground recharge area	EMP required.	Follow ESMF monitoring guidelines.
Depletion of water resources	Can alternative sources be developed? If not project area will not qualify for inclusion in project.	Follow ESMF monitoring guidelines.
Historic, archaeological, sacred or cultural heritage sites	Plan for protection of physical cultural resources required in accordance with World Bank OP 4.11.	Follow ESMF monitoring guidelines.
Existing forest cover	EMP required.	Follow ESMF monitoring guidelines.
Contamination of soil	Site might be rejected or EMP required.	Follow ESMF monitoring guidelines.
Loss of soil fertility	Site might be rejected or EMP required.	Follow ESMF monitoring guidelines.
Existence of physical cultural resources as defined under World Bank's Operational Policy 4.11.	Project area will not qualify for inclusion in project.	Follow ESMF monitoring guidelines.
Loss of land, livelihood or assets	Site might be rejected	Follow ESMF monitoring guidelines.
Hinder access to land, livelihood or assets	Site might be rejected	Follow ESMF monitoring guidelines.

Appendix 2: Environmental and Social Management Framework

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
1. Agro-chemicals	1.1 Inadequate storage	Training, routine inspection, suitable storage capacity.	Orchard owner	Inspection of storage	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	Embedded*
	1.2 Theft	Training, suitable storage capacity, farm watch.	Orchard owner	Inspection	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	Farm watch: LSL53/hr (embedded *)
	1.3 Out dated or damaged agrichemicals	Training, assistance in purchasing to ensure adequate amounts.	Orchard owner	Inspection of storage	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	Annual training cost (total): LSL385,000 per annum**
	1.4 Occupational health	Training (application, handling, cleaning), protective clothing and equipment.	Orchard owner	Training	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	See 1.3
	1.5 Mis- or overuse	Training in dosage and application.	Orchard owner	Training	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	See 1.3
		Sampling and chemical analysis of project soil and leaf tissues.	Horticulture coordinator/METC	Tests	GLOBAL G.A.P. Horticulture coordinator/MTEC	Annually Quarterly	Part of GLOBAL G.A.P., see 12
	1.6 Equipment malfunctioning	Inspections, financial support for annual updates of equipment required for safe application	Horticulture coordinator	Inspection of equipment	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	Annual replacement of equipment: LSL 160,000 per annum
	1.7 Lack of day-	Apply principles	Orchard owner	Training	GLOBAL G.A.P.	Annually	See 1.3

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
	to-day oversight	required for Global GAP certification and on-going audits			Horticulture coordinator	Monthly	
2. Water	2.1 Contamination of water resources	Alert all users of issue, provide alternatives, improve prevention measures, seek out clean up options.	Horticulture coordinator/METC	Tests	GLOBAL G.A.P. Horticulture coordinator/MTEC	Annually Quarterly	Part of GLOBAL G.A.P., see 12 Additional water tests: LSL 6,000/annually
	2.2 Depletion of water resources	Seek alternative sources, including rainwater harvesting.	Horticulture coordinator/ METC	Tests	GLOBAL G.A.P. Horticulture coordinator/MTEC	Annually Quarterly	Part of GLOBAL G.A.P., see 12 Additional tests: LSL 6,000/annually
3. Yields	3.1 Pest damage	Preventive measures, quick response to outbreak.	Orchard owner	Inspection	Horticulture coordinator	Monthly	Embedded*
	3.2 Inadequate thinning and pruning	On field training.	Orchard owner	Inspection	Horticulture coordinator	Monthly	See 1.3
	3.3 Weather damage to trees and crops	Hail nets to be installed to protect trees.	Orchard owner	Inspection	Horticulture coordinator	Monthly	Embedded*
		Diversity varieties to spread risk.	Orchard owner	Inspection	Horticulture coordinator	Monthly	Embedded*
		Screens, natural or built.	Orchard owner	Inspection	Horticulture coordinator	Monthly	Embedded*
4. Erosion	4.1 Depletion of soil nutrition, erosion	Contouring of land if necessary.	Orchard owners	Horticulture coordinator inspect and develop mitigation.	Horticulture coordinator	Monthly	Embedded*
		Ensure appropriate grading of soil and planting.	Orchard owners	Horticulture coordinator inspect and develop	Horticulture coordinator	Monthly	Embedded*

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
				mitigation.			
		Built adequate drainage.	Orchard owners	Horticulture coordinator inspect and develop mitigation.	Horticulture coordinator	Monthly	Embedded*
5. Stakeholders	5.1 Poor involvement of community stakeholders not directly benefitting from project	Quarterly meetings.	Horticulture coordinator or consultant	Meeting	PMU	Quarterly	LSL25,000/year/orchard
	5.2 Disruption to footpaths	Disruption should be fully avoided. If unavoidable, can only happen with full consent of community and mitigating measures.	Horticulture coordinator	Consultation	PMU	Once, prior to inception of project	TBD, avoidable
	5.3 Unheard community complaints and concerns	Complaints and sharing of concerns should be encouraged. May be raised verbally in community and/or orchard owner's meetings. All potential stakeholders appraised of meetings or notified where more formal comments/ complaints may be submitted.	Horticulture coordinator	Grievance mechanism	PMU	Orchard owners meet monthly Quarterly community meetings	See 5.1
	5.4 Social conflict due to increased disparities in community	Awareness of ability to participate in project activities, potential project support to	Horticulture coordinator	Consultations, meeting	PMU	Quarterly community meetings	See 5.1

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
	income	replicate.					
6. Farm finance	6.1 Orchard owners unable to secure credit (project, or private scale up)	Pursue support through LNDC Partial Credit Guarantee Fund (guarantees 50% of outstanding debt) and Lesotho Enterprise Assistance Program (LEAP) (training and credit), register as formal business so can be eligible for commercial financing.	Horticulture coordinator	Business plan development	PMU	Monthly	Embedded*
7. Knowledge base	7.1 Worker turn over	Enter into long-term contracts with trained labour to retain knowledge.	Orchard owners	Ongoing	Horticulture coordinator	Monthly	Embedded*
	7.2 Orchard owner turn over	Prepare business succession plan to ensure continued farm oversight.	Horticulture coordinator	Monthly visits	PMU	Monthly	Embedded*
8. Land tenure	8.1 Insecure land tenure	Formalize and ensure long-term land lease or sub-lease contracts.	Orchard owners	Inception of project	Horticulture coordinator	Inception	Embedded*
	8.2 Inappropriate land acquisition	Ensure that all participating orchard owners have provided adequate compensation to land owners, that land transfers are approved by chief.	Orchard owners	When additional land is being acquired	Horticulture coordinator	Inception	Embedded*
9. Gender	9.1 Gender inequality	Seek equal gender distribution of men	Horticulture coordinator	Inception of project	PMU	Inception	Embedded*

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
		women in association.					
		Seek equal gender distribution in training activities.	Horticulture coordinator	Training planning	PMU	TBD, when training offered	Embedded*
		Seek equal opportunities for workers.	Orchard owners	Business plan	Horticulture coordinator	Monthly	Embedded*
		Ensure equal opportunities in management roles.	Orchard owners	Business plan	Horticulture coordinator	Monthly	Embedded*
		Sensitize project participants on gender parity in training.	Horticulture coordinator	Training	PMU	During training	See 1.3
10. Labour	10.1 Child labour in project	No mitigating measure, child participation will not be permissible.	Horticulture coordinator/ PMU	Training	Labour Commissioner	Inception	See 1.3
	10.2 Spread of HIV/AIDS	Training mainstreamed into farm curricula and meetings.	Horticulture coordinator w. support from NGOs	Training, percent change in infection, local clinic	Labour Commissioner	All training events/community meetings	See 1.3
	10.3 High turnover	Understand underlying reasons, seek improvement in conditions to prevent turn over.	Orchard owners	Actual numbers	Horticulture coordinator	Monthly	Embedded*
	10.4 Minimum wage	Ensure that workers are paid at least current minimum wage.	Orchard owners	Updated regulations	Labour Commissioner	Annually	Embedded*
11. Rural livelihood improvement	11.1 Change in livelihood for households involved	To participate in the project, orchard owners should provide basic information to enable the project to track impact.	Horticulture coordinator	Collect basic household data: gender, ages, educational status, health status, additional	PMU	Annually	Embedded,*Part of World Bank M&E

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
				employment and incomes.			
	11.2 Un-improved incomes	Monitor orchard owner income during project and set up monitoring post-project.	Horticulture coordinator	Track income	PMU	Annually	Embedded,*Part of World Bank M&E
		Monitor number of jobs created and income.	Horticulture coordinator	Track income and jobs created	PMU	Annually	Embedded,*Part of World Bank M&E
12. Exports	12.1 Production compliance with GLOBAL G.A.P.	Business plan development and mitigation measures to comply with GLOBAL G.A.P. certification.	Orchard owners	Inspection	GLOBAL G.A.P. Horticulture coordinator	Annually Monthly	LSL 6,150 per site (this includes the certification costs and the travel costs for the auditors) annually for each orchard's GLOBAL G.A.P. certification
	12.2 Monitoring accuracy	Farmers are monitoring production. This can be cross-checked by using data collected by Lesotho customs authorities and MITM.	PMU	Tracking	PMU	Annually	Embedded*
13. Project phase out	13.1 Project participants unaware of phase out, end of project	Prepare comprehensive programme exit subject to orchard owner's input and adjustment.	PMU	Ongoing dialogue, planning	World Bank	Annually	Embedded*
	13.2 Government unaware of phase out, end of project	Ensure full awareness of phase out of subsidies and transfer to GoL agencies to prevent project failure. Prepare comprehensive transfer	PMU	Ongoing dialogue, planning	World Bank	Annually	Embedded*

Issue	Potential concern	Action/mitigation measure	Responsibility	Measure	Monitoring institution	Monitoring frequency	Estimated cost
		throughout project.					
14. Project management & monitoring	14.1 Poor implementation and/or awareness of ESMF	Comprehensive PMU training on ESMF and strategic communication to key stakeholders	PMU to contract	Training	World Bank	Annually	Embedded*

Note, costs in chart should not be aggregated as the same expense is mentioned more than once, as the cost reflects a total which covers several issues.

* Part expenses that orchard owner's budget for in the business plan. These expenses may be subsidized by project funds, but phased out over a five-year period.

** Cost is total for a full year, of all training provided to orchard owners and orchard workers.

Appendix 3: Horticulture coordinator's Monthly Reporting Framework

As per the Midterm Review, the below can be replaced by the Global GAP reporting mechanism. The below is included as a back-up.

Year/month covered in report:
Name of horticulture coordinator:
Name/location of orchard:
Last five visits to orchard (dates):
Names of orchard owners, workers or community members consulted during visit:
Visit objectives/focus:
<p>Agro-chemicals [check if concerns, short description of issue]:</p> <p>Storage <input type="checkbox"/> _____</p> <p>Theft prevention <input type="checkbox"/> _____</p> <p>Outdated/damaged <input type="checkbox"/> _____</p> <p>Occupational health concerns <input type="checkbox"/> _____</p> <p>Mis- or over-use <input type="checkbox"/> _____</p> <p>Equipment concerns <input type="checkbox"/> _____</p> <p>Oversight concerns <input type="checkbox"/> _____</p> <p>Mitigation required and agreed with orchard owner(s)[description]:</p>
<p>Water [check if concerns, short description of issue]:</p> <p>Contamination <input type="checkbox"/> _____</p> <p>Depletion <input type="checkbox"/> _____</p> <p>Development <input type="checkbox"/> _____</p> <p>Mitigation required and agreed with orchard owner(s)[description]:</p>

Yields [check if concerns, short description of issue]:

Pests _____

Thinning/pruning _____

Weather damage _____

Mitigation required and agreed with orchard owner(s)[description]:

Erosion [check if concerns, short description of issue]:

Erosion _____

Mitigation required and agreed with orchard owner(s)[description]:

Socio-economic issues raised by stakeholders (worker turn-over, pay, financial concerns, community cohesion, land tenure issues, benefit sharing, health) [check if concerns, short description of issue]:

Orchard owners _____

Community _____

Workers _____

Gender _____

Mitigation required and agreed with orchard owner(s)[description]:

Horticulture coordinator's next steps/plan (e.g. additional training to rectify issues identified, Global Gap, amendments in business plan etc.)



Appendix 4: Agro-chemicals Expected in Project

The table provides pesticides needed on an annual basis for a 30-hectare orchard.

Chemical	Quantity	Rate of application/10l water	Safety period	Target the following
Spay urea	3*25kg	200g	N/A	Flower stimulation
Zinc-Max	3*25kg	20ml	N/A	Nutrition
Chloropyriphos	3*25L	8ml	N/A	Scale
Biodew	3*5L	1ml	N/A	Fusirium & Powdery mildew
Flowable sulphur	3*25L	40ml	N/A	Fusirium & Powdery mildew
Dithane/sancozeb	3*25kg	15g	14days	Fusirium & Powdery mildew
Nimrod	3*5L	6ml	14days	Fusirium & Powdery mildew
Spraybor	3*25kg	10g	N/A	Nutrition
Azinphos	3*5L	5ml	14 days	Codling moth
Karate	6*1L	2ml	14 days	Bollworm
Rubigan	6*1L	2ml	21days	Mildew
Calcimax	3*25kg	45ml	0 days	Bitter pit
Mag-Max	3*25kg	30ml	0 days	Nutrition
Calypso	3*1L	1.5ml	21 days	Codling moth
MAP	3*25kg	50g	0 days	Post-harvest nutrition
K-Max	3*25kg	50g	0 days	Post-harvest nutrition
GF 120	3*25L	500ml	1 day	Fruit fly baiting
LAN	450*50kg	90g/tree	0 days	Nutrition
Liming requirements	Would depend on the specific soil analysis and recommendations			
Basal fertilizer	Would depend on the specific soil analysis and recommendations			
Copprox super	3*25kg	40g	0 days	Curly leaf
Thiram	3*25kg	15g	0 days	Curly leaf
Merphan/Captonflo	3*5L	10ml	14days	Various diseases
Endosulfan/thionex	3*6L	10ml	14days	Green aphids
Indar	3*3L	8ml	1day	Brown rot
Dipel	3*25kg	5g	0 days	Bollworm

Appendix 5: Agro-chemicals Banned in Lesotho

There is a total ban on the use of the pesticides included in this table in accordance with environmental legislation.

Chemical	Relevant CAS number(s)	Category
2,4,5- T	93- 76- 5	Pesticide
Aldrin	309- 00- 2	Pesticide
Binapacryl	485- 31- 4	Pesticide
Captafol	2425- 06- 1	Pesticide
Chlordane	57- 74- 9	Pesticide
Chlordimeform	6164- 98- 3	Pesticide
Chlorobenzilate	510- 15- 6	Pesticide
DDT	50- 29- 3	Pesticide
Dieldrin	60- 57- 1	Pesticide
EDB (1,2 dibromoethane)	106- 93- 4	Pesticide
Endrin	2385- 85- 5	Pesticide
Ethylene dichloride	107- 06- 2	Pesticide
Ethylene oxide	75- 21- 8	Pesticide
Heptachlor	76- 44- 8	Pesticide
Hexachorobenzene	118- 74- 1	Pesticide
Mercury compounds	99- 99- 9	Pesticide
Mirex	72- 20- 8	Pesticide
Monocrotophos	6923- 22- 4	Pesticide
Methmidophos (soluble liquid formulations of the substance that exceed 600g active ingredient/l)	10265- 92- 6	Pesticide formulation
Methyl-parathion (emulsifiable concentrates with 19.5%, 40%, 50%, 60% active ingredients and dusts containing 1,5%, 2% and 3% active ingredient)	298- 00- 0	Pesticide formulation
Monocrotophus (soluble liquid formulations of the substance that exceed 600g active ingredient/l)	6923- 22- 4	Pesticide formulation
Phosphamidon (soluble liquid formulations of the substance that exceed 1000g active ingredient/l)	13171- 21- 6	Pesticide formulation
Dustable powder formuations containing a combination of Benomyl at or above 7%, Cardofuran at or above 10% and Thiram at or above 15%	178- 35- 2 1563- 66- 2 137- 26- 8	Pesticide formulation
Crocodolite	12001- 28- 4	Pesticide

Source: Government of Lesotho: Environment Act 2008.

Appendix 6: Stakeholder Consultation and Contribution for ESMF

Title	Name
Orchard manager in Mahobong	Mr. Ts'epang Auda
Pilot orchard in Thuathe	Mr. Blessing Nkhasi
Pilot orchard in Qoqolosing	Mr. PhihlelaMotebang
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mrs. Makhethang Liphoto
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mr. Makhobalo Mohosho
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mrs. Maprince Phothane
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mr. Libako Mohapi
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mr. Maletsema Ncholo
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mrs. Mathaba Pasa
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mr. Joang Khethisa
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mr. Katileho Roelane
Part owner of Likhotola Fruit Farm Produce Company, Mahobong farmers association	Mrs. Malekena Mohosho
DG, Lesotho Land Administration Authority	Mr. Mahashe Chaka
Former DG, Lesotho Land Administration Authority	Mr. Sean G. Johnson
Director of Lease Services, Lesotho Land Administration Authority	Mr. Mosae Letele
International horticulture advisor	Mr. Yasou Konishi
Horticulture advisor	Dr. Thabiso Lebese
PSCEP Project Manager	Mr. Chaba Mokuku
PSCEP Administrative Secretary/Acting Procurement Manager	Ms. Mats'eliso Mokete

Key stakeholder issues reflected in ESMF design:

On farm communication

Given the many actors involved in the PSCEDPI horticulture pilot, orchard owners at times appeared confused regarding advice vs. absolute requirements to be followed. Actors include project consultants, PMU staff, GoL employees and the horticulture coordinator. Under PSCEDPII it is important to clarify communication to orchard owners to ensure that there is understanding of roles of different actors. When doubts arise, the orchard owners should be advised to consult with the horticulture coordinator. While the PMU cannot be expected to control all communication between actors and orchard owners, the PMU could work to prevent any possible misunderstandings by providing guidance to good project communication, including clear introduction of actors, their role and purpose in the project.

Reporting procedures

Under PSCEDPI, the pilot farmers were required to submit two different reports: a blue book that was overseen by the horticulture coordinator and a GLOBAL G.A.P book. Stakeholders considered this reporting somewhat excessive, with overlaps and inadequate formatting for reporting. As part of the ESMF, the reporting requirements will be reworked to merge the reporting formats while still ensuring adequate tracking of growth, use of agro-chemicals and production. Thus, the reporting should still cover

all issues tracked under PSCEDPI, but develop an adequate format that fulfils requirements of certification and streamlines requirements.

Robust communications strategy

During the very initial phase of PSCEDPI, some of the participating pilot farmers experienced tension with surrounding communities. Such tensions were likely rooted in the rural conditions where few opportunities are available and hardships are felt by most. While tensions have subsided through engagement, the ESMF provides for a more substantial budget to engage with surrounding communities, including quarterly community meetings and ability for all community members to reach the horticulture coordinator directly with any grievances.

Land issues

Some pilot farmers under PSCEDPI were considering entering short-term leases with neighbouring farmers in order to expand orchards. While the PMU has no direct say in activities that are no longer supported with project funds, it is advisable that project participants are aware of potential pit-falls in entering in unsecure and short term sub-lease contracts given the production cycle in horticulture. Additionally, it may be of concern that compensation in such sub-lease contracts either puts the lessee at risk due to high cost or compensates the leaser inadequately which may result in future land related conflicts. Such concerns are addressed in the ESMF and land tenure issues should be part of the horticulture business training. Lesotho Land Administration Authority was consulted during the preparation of the ESMF to discuss ways to formalize rural land tenure under the project, which will be a first in Lesotho under PSCEDPII.

Project phase-out

PSCEDPI received extension of support for the horticulture component. The extension supported the pilot farmers and was important to ensure commercial viability of production. However, consultation with farmers suggested need for a longer phase out of project support given the expansion of horticulture activities under PSCEDPII. The ESMF therefore provides for a comprehensive phase out program that prepares participants for end of project support. The phase out should be prepared in consultation with the project participants for best results.

