

PACIFIC AGRICULTURE MANAGEMENT SERVICED LIMITED (PAMSL) (CFP 092)

Environmental and Social Management Plan (ESMP)

Project Description

The purpose of this Partnership is to 'increase the cash incomes of smallholder coffee farmers in seven (7) selected villages located in the Hagen Central and North Waghi Districts of the Western Highlands and Jiwaka Provinces by the end of 2015'.

The selected villages targeted by this Partnership include: Kenta, Kuk and Ruki in the Hagen Central District of Western Highlands province. The other four villages, namely, Sigri, Bunumwo, Wara-ane, and Wagi Griaben are located in the North Waghi District of the Jiwaka Province.

This Partnership will undertake a series of activities to achieve its purpose. These activities are grouped into three (3) main headings, and these are:

The first activity will involve the identification, selection and mobilization of key project personnel. Necessary skills/competencies required to plan, implement, monitor, report on project activities as well as acquitting for project funds will be identified and recruited.

The next immediate task is to mobilize the farmers. Farmer profiles will be established and smallholder coffee blocks will be profiled. During the mobilisation process, farmers will be informed of the PAMSL Partnership and the benefits that are available to the smallholder coffee farmers under this Partnership. Description of potentially adverse environmental impacts Rehabilitation of smallholder coffee blocks will be the main focus under this Project.

Farmer training will be a key activity. Many of the smallholder coffee blocks are run down and unproductive due to lack of management skills, coffee husbandry practices and post-harvest management skills among the coffee farmers. Smallholder coffee farmers also lack knowledge and skills in managing and operating associations or cooperatives. Training for smallholder coffee farmers should target these needs of rural farmers.

Awareness on HIV/AIDS issues will be provided to the smallholder farmers. Farmers will be informed about the prevention, care and management aspects of HIV/AIDS.

Women and girls in the targeted communities will receive equal opportunities to participate in the proposed activities. Women and girls will be trained in certain areas where their knowledge and skill levels are low /poor.

A. Potentially adverse environmental impacts and mitigation measures

As stated in the Project description under 'Social and Environmental Impacts' the inputs proposed are small volumes and most of them are environmentally friendly. However, steps will be taken to deal with potentially adverse impacts, though minor in nature. The following identifies and describes potential impacts:

1. The use of small amounts of chemicals is intended during the initial phase of project implementation. The handling and application of herbicides (Glyphosate) and fungicides (copper based) in small amounts have the potential to be toxic to the farmers and workers who apply them and the potential of this being toxic to aquatic organisms in near-by streams and water sources if not handled properly for the following purposes;
 - (i) Spot spraying of Glyphosate is intended to be used for weed control in farms where sufficient shade cover is lacking and during establishment of new shade.
 - (ii) Fungicides will be used to inhibit the spread of 'Coffee Leaf Rust' during the initial major pruning phase and thereafter only where serious infestations are identified.

Description of Mitigation Measures for Chemical Use:

- (a) Storage: PAMSL Co-partner No. 1 has at Kenta a modified container for storage. The container is well aerated and secured for storage of all chemicals. It will be further modified on the project and will have associated washing facilities for spray handlers. Washing water will be channelled into a soak pit with no danger of contaminating creeks and water ways.
- The project will fund the development of similar facilities at the premises of Co-partner
- (b) Transport: Movement of chemicals from the store to the farmers' field will be undertaken by the Coordinators who will also maintain the store records and supervise application.
- (c) Training: Field staff will be fully trained in the handling and use of all chemicals, a service generally provided by the authorized dealers. However, the project will arrange additional training where suppliers' services are lacking. Spray teams will then be fully trained and supervised by PAMSL's Field Officers.
- (d) Application: Spray Teams will be fully trained and equipped for all spraying activities. Each operator will be trained in maintenance of the sprayer to ensure correct application rates and droplets size. Each will be provided with all necessary safety clothing (overalls, hat, gum boots) and accessories (gloves, face masks, goggles) All spray clothing will be washed in detergent and kept at the storage area.
- (e) Spills, Leaks & Disposal of Containers: A supply of sawdust, sand and coffee husks will be maintained at all sites where chemicals are being stored and/or transferred between containers and/or sprayers. The use of water for cleaning spills will be strictly forbidden. All used containers including cardboard boxes will be decontaminated using detergents, rendered unusable, and will be buried in a suitable location free from leaching.
2. Nurseries: Nurseries will be constructed using building materials from the surrounding bushes for shade and collecting soil from old abandoned farmers' gardens including sand from nearby rivers for preparing the medium for germinating and growing the seedlings. This could be potentially destructive to the environment if excessive amounts are removed. Also if chemicals and fertilizers are involved and not used properly could lead to leakage and spillage into nearby waterways thereby being toxic to aquatic life forms. In managing this issues, nurseries will be located in growers' blocks, at a safe distance from any river or stream and only required amounts of materials, soil and sand will be removed. No chemicals and fertilizers will be used on the nursery.
3. Drainage: Smallholder drainage practices are not normally adverse to the environment but to avoid minor spoil damage thereby promoting water-logging in coffee blocks and within drains, farmers will be required to ensure that existing drains are maintained / de-silted. Farmers will be required to ensure that existing drains are maintained / de-silted. Material taken from the bottom of drains will be spread over the inter-rows of the coffee plot. Material extracted from any new drain will be similarly spread in the inter rows.
4. Shade management: The removal and cutting down of larger branches from shade trees could be destructive in nature by falling on existing coffee bushes and younger shade trees and also be obstructive to the farmers' movements within the coffee gardens. This will be managed by cutting the larger branches using ropes and tying the branches to the shade trees themselves and cutting them to size. Larger branches cut from shade trees will be used for fence maintenance while smaller wood is traditionally used for firewood (home cooking) while leaves and small branches are spread on the ground amongst the coffee.
5. Pulping: Coffee pulp and waste water from pulping could impact negatively on the terrestrial and aquatic environments if allowed into water ways PAMSL central factory complies with all CIC requirements for waste water and coffee skin treatment and disposal.

Monitoring program

- Staff of the PMU will routinely undertake field inspection of the activities of the Lead Partner and the smallholder farmers included in Co-Partnership agreement to verify the Quarterly reports provided by the Lead Partner.
- The Lead Partners will maintain records of the use of chemicals, the application of rehabilitation activities (drainage & shade management) and coffee processing.

B. Potentially adverse Social impacts and mitigation measures

The social impact is a positive one of increased income to the household. However, it requires more time to be spent in the coffee gardens as opposed to other social activities. The high income from these farming activities will assist in the reduction of HIV/AIDS and other anti-social behaviours by the farming population.

Following are descriptions of possible adverse social impacts identified and mitigation measures;

1. **Indigenous peoples policy:** The partnership has been established based on the co-partners' need to improve the productivity of their existing coffee gardens and improve the quality of the produce leading to certification under Rain Forest Alliance in order to target niche markets that pay premium prices. The PAMSL partnership has resulted from intensive consultation and awareness. There is broad community support for the project.
2. **Involuntary resettlement policy:** All the lands to be utilized for the partnership activities are owned by the beneficiaries themselves. There will be no land donated to the project by members of the community.
3. **Negative social impacts:** To avoid misuse of income from coffee sales, members of participating households will be trained in planning expenses / budgeting and record keeping. Awareness and information sessions will also be provided to reduce alcohol abuse and HIV/ AIDS prevention. Women will participate fully in all activities and parents of school aged children will be discouraged from involving school children in farm activities during school hours. The availability of a grievance mechanism has been made known to the beneficiaries including the locations of the grievance boxes.

Monitoring program and responsibilities

- Staff of the PMU will routinely undertake field inspection of the activities of the Lead Partner and the smallholder farmers included in Co-Partnership agreement to verify the Quarterly reports provided by the Lead Partner.
- The Lead Partners will maintain records of training provided and awareness/information sessions.

Cost Estimates and Source of Funds

Funds to implement the ESMP will be part of the Partnership budget. These are specified for the initial sub project investment

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
A. ENVIRONMENTAL MANAGEMENT PLAN (EMP)										
1. Nursery Establishment	Site Preparation	Grass Cutting and shrub removal and clearing	During Site Preparation	Clearing only within the area to be utilized within existing smallholder garden	Farmers	During Site Preparation	Nursery Site cleared	Village Extension Officer or Extension Officer (EO)	During nursery establishment	As per activity budget
	Shade/Shelter Construction	Collecting materials such as posts, bush twines and kunai grass	During Shade/shelter construction	Only collect materials that will be required for this purpose	Farmers	During Shade/shelter construction	Shelter constructed	Village Extension Officer or EO		As per activity plan/budget
	Soil mixture/Seed bed/poly bag preparation	Taking top soil and sand for potting mixture	Soil mixture preparation	Only collect top soil and sand that will be required	Farmers	During soil mixture preparation	Poly bags / or seed bed prepared	Village Extension Officer or EO		As per project budget
	Seedling development	Fetching water from nearby creek / water source	During seedling development	Fetch enough water to be utilized	Farmers	During Seedling Development	Healthy seedlings	Village Extension Officer or EO		As per project budget
	Seedling planting in field	In-filling missing spaces or replacing old unproductive trees with new seedlings	Seedling Planting in field	Making a hole in the garden and planting the seedlings	Farmers	During Seedling Planting in the field / coffee gardens	Fully planted coffee garden with no empty spaces	Village Extension Officer or EO	During farm Visits	As per project budget
2. Rehabilitation	Fencing	Post preparation	During coffee rehabilitation	Prepare fencing posts / sticks	Farmers	Coffee rehabilitation period	Fence completed	Village Extension Officer or EO	Farm visit during rehabilitation period	As per project budget
		Post Planting		Making holes and planting posts / sticks						
	Weed Control	Slashing / hand weeding		Slashing and uprooting	Farmers		Weeds under control			

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
				weeds						
		Herbicide (Glyphosate) Spraying	Initial shade establishment stage	Safe transportation, storage and application practices including training of sprayers	Special Spray team and Co-Partners	During Coffee rehabilitation and shade establishment period	Weeds under control, chemical storage shed and spray equipment and safety gear usage / availability	Lead Partner, PMU	Quarterly Reports and	
	Shade Management	Thinning	Rehabilitation period (after weed control and drain maintenance)	Some shade trees are cut-down	Farmer	Rehabilitation period	Adequate shade cover	Village Extension Officer or EO	Farm Visit during rehabilitation period	As per project budget
		Shade Lifting		Lower branches are removed	Farmer		At least 5 – 6m space between top of coffee trees' canopy and lower branches / leaves of shade trees			
	Pruning	Recycle Pruning	First pruning during project implementation if pruning is over-due or after harvesting every season	Old/mature stems of unproductive coffee removed	Farmer	After main harvesting period	Only healthy bearing heads and young suckers	Village Extension Officer or EO	Farm Visit during rehabilitation period	As per project budget
		Maintenance Pruning	After harvesting and every 2 to 4 months thereafter	Sucker selection, de-suckering, and skirting	Farmer	Every 2 – 4 months	2 – 4 stems of coffee per stump / main stem	Village Extension Officer or EO	Farm Visit during rehabilitation period	As per project budget
	Drainage	Removal of debris and soil in drains	After harvesting and	Cleaning drains of matter that filled up drains and spreading this under the coffee	Farmer	Rehabilitation period	Clean drains and removed matter spread under coffee	Village Extension Officer or EO		As per project budget

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
3. Maintenance	Weed Control	Manual	As necessary on a regular basis	Slashing and uprooting weeds	Farmer	When weeds grow and before seeding	Weed under control	Village Extension Officer or EO	Farm visit	As per project budget
		Chemical Control - Glyphosate	First 1 – 2 years	Chemical storage, handling, applying and waste disposal will be done under environmentally safe conditions including the use of safety gear for workers. Training of workers / farmers in the safe handling and usage of chemicals at the correct dosage	Lead Partner, Co - partners	During the shade establishment period	Weeds under control, Specifically constructed chemical and safety gear storage shed, availability and utilization of safety gear, evidence of training in safe handling and use of chemicals	Lead Partner / PMU	Quarterly Reports, farm visits by EOs and random verification visits by the PMU	As per project budget
	Shade Management	Removal of new shoots and lower branches	As required	Lower twigs and leaves are removed	Farmer	When required	Adequate shade	Village Extension Officer or EO	Farm visit	As per project budget
	Pruning	Recycle Pruning	Annually and immediately after harvesting	Removal of old unproductive stems	Farmer	Immediately after harvesting	2 – 4 stems of coffee per stump / main stem	Village Extension Officer or EO	Farm visit	As per project budget
		Maintenance Pruning	After harvesting and 2 to 4 month intervals	Handling and de-suckering	Farmer	Every 2 – 4 months	2 – 4 stems of coffee per stump / main stem and selected suckers only	Model Farmer / Village Extension	Farm Visit	AS per project budget

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
								Officer		
	Pest Control	Spraying of copper based fungicides against Coffee Leaf Rust (CLR)	After recycle pruning when new suckers are selected	Chemical storage, handling, applying and waste disposal will be done under environmentally safe conditions including the use of safety gear for workers. Training of workers / farmers in the safe handling and usage of chemicals at the correct dosage	Lead Partner, Co-Partners,	After recycle pruning after sucker selection and where CLR infestation is serious	CLR under control, Specifically constructed chemical and safety gear storage shed, availability and utilization of safety gear, evidence of training in safe handling and use of chemicals	Lead Partner / PMU	Quarterly Reports, farm visits by EOs and random verification visits by the PMU	AS per project budget
	Drainage	Removal of debris and soil in drains	As required	Cutting but not removal of grass along the sides and bottom of the channel together with the removal of accumulated silt and grass cuttings and clean base of drain to maintain original	Farmer	As and when required normally after harvesting	Well maintained drains	Village Extension Officer or EO	Farm visit	As per project budget

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
				gradient and depth and spread debris under coffee in garden						
	Manuring	Organic	When organic matter is applied & spread	Spread under coffee bushes	Farmer	After pulp decomposition and availability of organic matter	Healthy coffee trees	Village Extension Officer or EO	Farm visit	Negligible
4. Processing	Pulping	CIC approved/licenced wet processing mill	Harvesting Period	Waste water allowed to sit in anaerobic ponds and then evaporates and sips into soil	Lead Partner	During coffee season	Water source not polluted	Lead Partner / PMU	Normal Management and Quarterly Report	NIL
				Decompose pulp in decomposition ponds and spread under coffee	Lead Partner	During and after coffee season	Coffee pulp under coffee trees	Lead Partner / PMU	Normal Management and Quarterly reports	NIL
B. SOCIAL IMPACT / ISSUES : SOCIAL MANAGEMENT PLAN (SMP)										
1. Indigenous Peoples Policy	<i>All Co-Partners have signed up voluntarily following free, prior and informed consultations</i>									
2. Involuntary Resettlement Policy	<i>All land used are existing coffee gardens owned by beneficiaries and no land will be used collectively by Co-Partner Groups</i>									

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
3. Negative Social Impacts	Coffee Sales	Increase in disposable income and spent on unnecessary things such as alcohol	Cash is received in payment for coffee	Training on expenses planning and budgeting for both husbands and wives. Farmer Group adopts a policy of income expenditure record keeping	Lead Partner	During Farm Management Training for households & Capacity Building Training for farmer groups	List of Training materials offered include training on budgeting	Lead Partner, (PMU)	Quarterly (review reports & random verification inspections)	In line with budget
	All Activities	If partnership caters only for men's interest resulting in further marginalization of women	When project is implemented	Ensure that women are involved and share all benefits from the project	Lead Partner	When capacity building trainings are provided, when tools and farm implements are distributed, and encourage both men and women to be involved equally	List of proposed activities include the participation of women	Lead Partner, (PMU)	Quarterly (review reports & random verification inspections)	In line with budget
				Gender balance among extension workers, i.e., equal number of male and female extension officers to be engaged	Lead Partner	Project Implementation	Women Extension Officers on PAMSL staff	Lead Partner / PMU	Quarterly (review reports & random verification inspections)	Budgeted in Project

Project Stage	Project Activity	Impacts	When Impact Occurs	Mitigation Plan			Monitoring Plan			Costs
				Mitigation Measure	Who	When to be applied	Indicator	Who	When	
	During Training sessions	Incremental income could worsen existing problems of alcohol abuse and domestic violence	When income potential increases as a result of more income for the household	If alcohol abuse is rampant, ensure that partnership activities include awareness and counselling	Lead Partner	During training sessions	List of proposed training materials should include alcohol abuse prevention, counselling etc.,	Lead Partner (PMU)	Quarterly (review reports & random verification inspections)	In Line with Project Budget
	HIV / AIDS Training	Possible increase incidence of HIV/AIDS	When income potential increases as a result of more income for the household	If HIV / AIDS is prevalent, ensure partnership activities include HIV / AIDS awareness and prevention seminars	Lead Partner	HIV / AIDS awareness and prevention training	List of proposed activities include HIV / AIDS awareness and prevention campaigns	Lead Partner (PMU)	Quarterly (review reports & random verification inspections)	In Line with Project Budget
	During training sessions / awareness sessions	Possible exploitation of children in the farms, preventing them from going to school	Project Implementation	Ensure farmers / groups adopt policy restricting employment of children during school days	Group Leaders, Lead Partner	During training sessions	Resolution from farmer group adopting a policy on employment of children in the coffee farms (ensuring child schooling is not disrupted)	Lead Partner (PMU)	Quarterly (review reports & random verification inspections)	In Line with Project Budget
	During training / awareness sessions	Absence of grievance mechanism	Project Implementation	Ensure that grievance mechanism is in place and the people are aware of it	Lead Partner, (PMU)	During project implementation	(a) Information materials (b) Grievance boxes installed	Lead Partner (PMU)	Quarterly (review reports & random verification inspections)	Negligible