KOSEM GROUP PROJECT (CFP 112)
Environmental and Social Management Plan (ESMP)

Project Description
The main goal of this project is to revive and rehabilitate 146.3 hectares of coffee gardens owned by 317 farmers in the WSCG Group and bringing production from 300kg green bean per hectare to about 700kg green bean per hectare. The growers will also produce premium quality coffee and receive better prices. Through higher financial returns it will help both economically and socially through higher financial returns and better knowledge and skills.

Kosem Ltd would like to, in the next 3 years, work with its co-partner group to:

i. Improve coffee husbandry practices in an environmentally friendly manner.
ii. Rehabilitate coffee plots to increase coffee production
iii. Establish Central Nurseries and Wet Processing Facilities to improve quality of coffee produced.
iv. Increase participation and revenue sharing with females.
vi. Certification for all co-partners making them eligible to enter into niche markets.

A. Potentially adverse Environmental impacts and mitigation measures
The ‘Social and Environmental Impacts’ section of the proposal describes positive impacts of the project: It notes that: “The coffee plots available for immediate rehabilitation do not pose any significant environmental problems as the coffee farms are scantily spread over the total land area and are not large enough to cause any problems of that nature, if any. Most of the inputs proposed under the PPAP are small amounts and all of them are environmentally friendly.” However, following are descriptions of possible adverse environmental impacts identified and mitigation measures;

1. The use of small amounts of chemicals is intended during the initial phase of project implementation. 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. 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. These chemicals (herbicides and fungicides) have the potential to be toxic to the farmers and workers via direct contact to their skin or ingestion or to aquatic organisms within nearby waterways and creeks if not handled properly and allowed to spill. Following are measures to correct and manage these situations;

   Storage: Kosem Ltd has identified an existing dry, well aerated storage facility. Within this large storage shed an area measuring 6m x 6m will be enclosed and separately secured for the limited amount of chemicals needed. All containers will be properly labelled and stored on pallets. Records will be maintained for all incoming and outgoing chemicals, technical data and application rates and a list of farms on which the sprays will be applied.

   Transport: Movement of chemicals from the store to the farmers’ field will be undertaken by Kosem’s Field Officers, who will also maintain the store records and supervise application.
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 Kosem’s Field Officers.

Application: Spray Teams will be fully trained and equipped to provide ‘spot spraying’. 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, etc..) and accessories (gloves, face masks, goggles, etc.,)

Spills, Leaks & Disposal of Containers: A supply of sawdust 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 clean-up spills will be strictly forbidden. All used containers will be decontaminated using detergents while those deemed unusable (plus cardboard boxes) will be buried in a suitable location free from leaching.

2. Nurseries: Nurseries will be constructed using materials from the surrounding bushes such as materials for constructing the shade collecting soil and sand for preparing the medium for germinating and growing the seedlings which 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. To better manage these situations, only required materials will be taken and used to construct the nursery shade and to fill the polybags. Nurseries will be centrally located in the vicinity of Nondugl Station, remote from any river or stream. No chemicals will be used on the nursery.

3. Drainage: Drainage maintenance is not expected to be 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. Spoil taken from the bottom of drains will be spread over the inter-rows of the coffee plot. No new drains are envisaged.

4. Shade management: 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 and smaller wood is traditionally used for firewood (home cooking) while leaves 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. Smallholder farmers will process their coffee cherries to parchment stage on their own blocks. The hand pulpers used are generally operated in the vicinity of the coffee block; therefore, the coffee pulp is easy to return to the coffee block or food garden as mulch. Water used is minimal and seeps into the ground. Farmers will be instructed and trained in the pulping of their coffee.
Monitoring program and responsibilities

- Staff of the CIC 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 in order to target the established coffee markets of Kosem Coffee Ltd. This 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.

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.
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<th>Mitigation Plan</th>
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<th>Costs</th>
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<tbody>
<tr>
<td>A. ENVIRONMENTAL MANAGEMENT PLAN (EMP)</td>
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<td></td>
<td>Mitigation Measure</td>
<td>Who</td>
<td>When to be applied</td>
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<td></td>
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<td></td>
<td>Nursery Site cleared</td>
<td>Farmers</td>
<td>During Site Preparation</td>
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<td></td>
<td>Fencing posts / sticks</td>
<td>Farmers</td>
<td>Make hole in the garden</td>
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<td></td>
<td>Making holes and planting posts / sticks</td>
<td>Farmers</td>
<td>During Seedling Planting in the field / coffee gardens</td>
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<td>Post preparation</td>
<td>Farmers</td>
<td>Coffee rehabilitation</td>
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<td>Planting</td>
<td>Farmers</td>
<td>Post Planting</td>
</tr>
</tbody>
</table>

**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)
  - 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
  - During nursery establishment

- **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

**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

- **Post Planting**
  - Making holes and planting posts / sticks
  - Farmers
  - Post Planting
  - Village Extension Officer or EO
  - As per project budget
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<tbody>
<tr>
<td></td>
<td>Weed Control</td>
<td>Slashing / hand weeding</td>
<td>Slashing and uprooting weeds</td>
<td>Farmers</td>
<td>Weeds under control</td>
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<tr>
<td></td>
<td>Herbsicide (Glyphosate) Spraying</td>
<td>Initial shade establishment stage</td>
<td>Safe transportation, storage and application practices including training of sprayers</td>
<td>Special Spray team and Co-Partners</td>
<td>During Coffee rehabilitation and shade establishment period</td>
<td>Lead Partner, PMU</td>
</tr>
<tr>
<td></td>
<td>Shade Management</td>
<td>Thinning</td>
<td>Rehabilitation period (after weed control and drain maintenance)</td>
<td>Some shade trees are cut-down</td>
<td>Rehabilitation period</td>
<td>Adequate shade cover</td>
</tr>
<tr>
<td></td>
<td>Shade Lifting</td>
<td>Thinning</td>
<td>Rehabilitation period (after weed control and drain maintenance)</td>
<td>Lower branches are removed</td>
<td>Farmer</td>
<td>Adequate shade cover</td>
</tr>
<tr>
<td></td>
<td>Pruning</td>
<td>Recycle Pruning</td>
<td>First pruning during project implementation if pruning is over-due or after harvesting every season</td>
<td>Old/mature stems of unproductive coffee removed</td>
<td>Farmer</td>
<td>Adequate shade cover</td>
</tr>
<tr>
<td></td>
<td>Maintenance Pruning</td>
<td>After harvesting and every 2 to 4 months thereafter</td>
<td>Sucker selection, de-suckering, and skirting</td>
<td>Farmer</td>
<td>Every 2 – 4 months</td>
<td>2 – 4 stems of coffee per stump / main stem</td>
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<td></td>
<td>Drainage</td>
<td>Removal of debris and soil in drains</td>
<td>After harvesting and</td>
<td>Cleaning drains of matter that filled up drains and spreading this under the coffee</td>
<td>Farmer</td>
<td>Adequate shade cover</td>
</tr>
</tbody>
</table>

- **Monitoring Plan:**
  - Lead Partner, PMU
  - Quarterly Reports and As per project budget

- **Who:**
  - Farmers
  - Special Spray team and Co-Partners
  - Lead Partner, PMU
  - Village Extension Officer or EO
  - Village Extension Officer or EO
  - Village Extension Officer or EO
  - Village Extension Officer or EO
  - Village Extension Officer or EO
  - Village Extension Officer or EO

- **When and Where:**
  - Weed Control: Rehabilitation period
  - Herbsicide (Glyphosate) Spraying: During Coffee rehabilitation and shade establishment period
  - Thinning: Rehabilitation period
  - Shade Lifting: Rehabilitation period
  - Pruning: After harvesting and every 2 to 4 months thereafter
  - Maintenance Pruning: Every 2 – 4 months
  - Drainage: Rehabilitation period
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<td></td>
<td>Mitigation Measure</td>
<td>Who</td>
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<tr>
<td>3. Maintenance</td>
<td>Weed Control</td>
<td>Manual</td>
<td>As necessary on a regular basis</td>
<td>Slashing and uprooting weeds</td>
<td>Farmer</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>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</td>
<td>Lead Partner, Co - partners</td>
</tr>
<tr>
<td>Shade Management</td>
<td>Removal of new shoots and lower branches</td>
<td>As required</td>
<td>Lower twigs and leaves are removed</td>
<td>Farmer</td>
<td>When required</td>
</tr>
<tr>
<td>Pruning</td>
<td>Recycle Pruning</td>
<td>Annually and immediately after harvesting</td>
<td>Removal of old unproductive stems</td>
<td>Farmer</td>
<td>Immediately after harvesting</td>
</tr>
<tr>
<td>Maintenance Pruning</td>
<td>After harvesting and 2 to 4 month intervals</td>
<td>Handling and de-suckering</td>
<td>Farmer</td>
<td>Every 2 – 4 months</td>
<td>2 – 4 stems of coffee per stump / main stem and selected suckers only</td>
</tr>
<tr>
<td>Project Stage</td>
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<td>Pest Control</td>
<td>Spraying of copper based fungicides against Coffee Leaf Rust (CLR)</td>
<td>After recycle pruning when new suckers are selected</td>
<td>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</td>
<td>Lead Partner, Co-Partners,</td>
</tr>
<tr>
<td></td>
<td>Drainage</td>
<td>Removal of debris and soil in drains</td>
<td>As required</td>
<td>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</td>
<td>Farmer</td>
</tr>
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<td>Project Stage</td>
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<td>Mitigation Measure</td>
<td>Who</td>
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<tr>
<td></td>
<td>Manuring</td>
<td>Organic</td>
<td>When organic matter is applied &amp; spread</td>
<td>gradient and depth and spread debris under coffee in garden</td>
<td>Farmer</td>
</tr>
<tr>
<td></td>
<td>Pulping</td>
<td>Hand-Pulping (by smallholder)</td>
<td>Harvesting Period</td>
<td>Use of small amounts of water and recycle</td>
<td>Farmer</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Decompose pulp and spread under coffee</td>
<td>Farmer</td>
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B. SOCIAL IMPACT / ISSUES: SOCIAL MANAGEMENT PLAN (SMP)

1. Indigenous Peoples Policy
   
   *All Co-Partners have signed up voluntarily following free, prior and informed consultations*

2. Involuntary Resettlement Policy
   
   *All land used are existing coffee gardens owned by beneficiaries and no land will be used collectively by Co-Partner Groups*

3. Negative Social Impacts
   
<p>| 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. | Lead Partner | During Farm Management Training for households &amp; Capacity Building Training for | List of Training materials offered include training on budgeting | Lead Partner, (PMU) | Quarterly (review reports &amp; random verification inspections) | In line with budget |</p>
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<td>When to be applied</td>
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<td>Farmer Group adopts a policy of income expenditure record keeping</td>
<td>farmer groups</td>
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<td></td>
<td>All Activities</td>
<td>If partnership caters only for men’s interest resulting in further marginalization of women</td>
<td>When project is implemented</td>
<td>Ensure that women are involved and share all benefits from the project</td>
<td>Lead Partner</td>
<td>When capacity building trainings are provided, when tools and farm implements are distributed, and encourage both men and women to be involved equally</td>
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<td>Lead Partner</td>
<td>During training sessions</td>
<td>List of proposed training materials should include alcohol abuse prevention, counselling etc.,</td>
</tr>
<tr>
<td></td>
<td>During Training sessions</td>
<td>Incremental income could worsen existing problems of alcohol abuse and domestic violence</td>
<td>When income potential increases as a result of more income for the household</td>
<td>If alcohol abuse is rampant, ensure that partnership activities include awareness and counselling</td>
<td>Lead Partner</td>
<td>During training sessions</td>
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<td>HIV / AIDS Training</td>
<td>Possible increase incidence of HIV/AIDS</td>
<td>When income potential increases as a result of more income for the household</td>
<td>If HIV / AIDS is prevalent, ensure partnership activities include HIV / AIDS awareness and prevention seminars</td>
<td>Lead Partner</td>
<td>HIV / AIDS awareness and prevention training</td>
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<td>Project Implementation</td>
<td>Possible exploitation of children in the farms, preventing them from going to school</td>
<td>Ensure farmers / groups adopt policy restricting employment of children during school days</td>
<td>Resolution from farmer group adopting a policy on employment of children in the coffee farms (ensuring child schooling is not disrupted)</td>
<td>Negligible</td>
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<td>Project Implementation</td>
<td>Absence of grievance mechanism</td>
<td>Ensure that grievance mechanism is in place and the people are aware of it</td>
<td>Information materials (a) Grievance boxes installed (b)</td>
<td>In Line with Project Budget</td>
</tr>
</tbody>
</table>

- 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)

- 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
- Information materials (a) Grievance boxes installed (b)
- Lead Partner (PMU)
- Quarterly (review reports & random verification inspections)