

**Improving Productivity and Market Success of Ethiopian Farmers**  
**ENVIRONMENTAL MONITORING PLAN**

**Goma Wereda**

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## Environmental Monitoring Plan (EMP): Goma Wereda

### 1. Introduction

The project covered by this EMP is the 2007 programme of technology packages being introduced in Goma Wereda, Oromiya Region, a Pilot Learning Wereda (PLW) of IPMS Ethiopia, that are considered likely to have potential environmental impacts.

Three types of potential impact of the programme of intervention are considered in the *Environmental Screening and Assessment Report* (EASR) for this PLW:

- Principal environmental impacts, defined as **potential effects** directly attributable to the concerned IPMS activity (see Table (i) of the EASR);
- **Cumulative environmental impacts**, defined as the possible long-term effects of the concerned activity, including the accumulated effects of multiple activities that may arise in association with, or encouraged by, the concerned activity (see Section 5 of the EASR);
- **Impacts of the environment** on the performance of the concerned activity (see Section 6 of the EASR).

A follow-up program to ensure that the recommended mitigating measures are implemented as required will be conducted by the staff of the Environment and Natural Resources Unit in the Wereda Office of Agriculture, with support from IPMS as appropriate. This EMP provides the basic framework for the follow-up.

### 2. Mitigating Measures to be Monitored

The following Tables set out the potential impacts and related mitigating measures, and the monitoring to be conducted for each mitigating measure.

Table (a) shows the indicators to be monitored for the implementation of mitigating measures designed to address the **potential impacts** of the following activities:

- Expansion of coffee production
- Expansion of Livestock Production

Table (b) shows indicators to be monitored for the implementation of mitigating measures designed to address the **potential cumulative impacts** of:

- Loss of indigenous poultry species Diversity
- Urban zero grazing.

It should be noted that the cumulative impacts considered *should include those regarded as unlikely but possible*. It is important to be able to show that IPMS has looked ahead, and has

taken precautions to deal with such eventualities, should they occur, unlikely though some people may consider them to be.

Table (c) shows indicators to be monitored for implementation of mitigating measures to address the **potential impacts of the environment on the activity**:

- Runoff/flooding and gulying
- Prevalence of livestock diseases, mainly tryposomiasis
- Soil acidity

In each case, the statement of impacts and mitigating measures are set out in summary. More detail can be found in the *Environmental Assessment and Screening Report* for Goma Wereda.

Table (d) in Section 3 summarises the basic information on the indicators and how the data will be collected.

Table (a) Matrix of potential environmental impacts

Activities	Expansion of coffee production				Expansion of livestock production			
<b>Likely impacts before mitigating measures</b>	Dumping of liquid and solid waste onto rivers and stream will affect human and animal health and the fauna in the rivers/streams.				Water body pollution due to large amount and unsafe disposal of animal waste products.	Soil fertility depletion due to excessive removal of crop residues for livestock feed	Use of excessive Vet. Drugs and chemicals in dairy, fattening and poultry	Environmental pollution related to smell and noise especially in and around urban centres where population density is higher
<b>Mitigating measures</b>	Training to coffee de-hulling and pulping plant managers/owners, Wereda NRM and Environment experts and farmers.	Demonstrate alternative uses of pulp and hulls (composting, briquettes, etc.)	Growing of appropriate plant species that are able to clean polluted waters	Use of eco-friendly coffee processing plants (technology)	Train farmers and DAs to develop and implement rules and regulations for proper waste management	(i) Promote backyard forage development practices  (ii) Improve the productivity of natural pasture and encourage tethering of livestock	Train farmers and DAs so that they will develop drugs and chemicals Mgt plan and implement	(i) Urban public health workers and other relevant bodies trained on livestock mgt in populated areas with a general encouragement of improved livestock production programmes in less populated areas so that smell and noise pollution is minimized.
<b>Indicator</b>	Number of trained DAs and farmers	(i) Number and type of alternative uses demonstrated  (ii) Number of users of these new alternatives	(i) Number of introduced species for this purpose,  (ii) Area (ha) under these introduced species	Number of coffee processing plants that use less water	Number of trained farmers and DAs	(i) Number of farmers growing forages in their backyards (ii) Total area of improved natural pasture	Number of trainings made regarding acquisition, application, accidents, storage and disposal of drugs and chemicals	Existence of plans considering environmental health issues at wereda or town level when allocating land for dairy, fattening or poultry
<b>Who collects</b>	WoA/RDO/Regional EPA	WoA/RDO	WoA/RDO	WoA/RDO	OoARD/IPMS staff	OoARD/IPMS staff	OoARD/IPMS staff	OoARD/IPMS staff
<b>How</b>	Reports, field and market visits				Reports and field visits			Reports and field visits
<b>When</b>	6 monthly				6 monthly			
<b>Where</b>	OoARD/IPMS & activity site				OoARD/IPMS & activity site			

Table (b) Matrix of potential cumulative impacts

Activities	Urban Zero-Grazing			Loss of poultry species diversity
Potential cumulative impacts	Uncontrolled adoption of zero-grazing (dairying, fattening and poultry) in peri-urban and high-density urban areas, leading to health hazards, noise and smell pollution			Extensive use of exotic poultry breeds may narrow the biodiversity and hence become susceptible to diseases during outbreaks because of the narrow genetic base.
Mitigating Measures	The project will liaise with the urban Public Health authority and will include their representative in training workshops, in order that any regulations controlling the keeping of cattle in the urban areas are recognized and enforced.	The project will draw upon the results of the specialized research into this issue being promoted by IPMS, and implement as appropriate		Wereda Agricultural Office should monitor the production rates of the exotic breeds so that they will not be a total replacement to the indigenous breed.
Indicator	Participation of Public Health representatives in training workshops	Evidence that regulations are being enforced	To be identified	Proportion of farmers engaged in exotic poultry production vs those in indigenous poultry production
Who collects	OoARD/IPMS staff			OoARD/IPMS staff
How	Reports, field visits (physical observation)			Reports and field visits
When	6 monthly			6 monthly
Where	Urban and peri-urban areas			OoARD/IPMS & activity site

**Table (c) Matrix of potential impacts of the environment on the project**

Activities	Runoff/Flooding and Gullying	Prevalence of livestock diseases, mainly trypanosomiasis	Soil acidity
Potential cumulative impacts	(i) High rainfall sometimes causes siltation of water bodies, leading to shortage of water.	As a result of the transhumance practices (purchase of livestock, movement of livestock in search of grazing lands) mainly in one of the PA s, disease outbreaks could occur.	(i) The area experiences high rainfall which induces soil acidity. (ii) As a result of the support of the project for improving crop production and marketing farmers may use excessive fertilizer and hence aggravate soil acidity.
Mitigating Measures	Integrated watershed management in which in-situ water harvesting measures will be incorporated	Training of farmers and DAs on how select a healthy animal when buying	Goma is recognised as soil acidity affected wereda. Currently the government is embarking into extensive acid soil reclamation programme and the project has bought 5 lime crushers for the Federal MoARD of which 2 are for Oromiya region BoARD. This will then require making sure that Goma is part of this programme.
Indicator	Number of watersheds properly managed or area covered	Number of farmers and DAs trained	Number of farmers applying lime for acidity remediation Total area where lime is applied
Who collects	OoARD/IPMS staff	OoARD/IPMS staff	OoARD/IPMS staff
How	Reports, field visits	Reports	Reports
When	6 monthly	6 monthly	6 monthly
Where	OoARD/IPMS & activity site	Wereda	Wereda

Table (iv): Summary of Mitigating Measure Indicators

Indicator	Who collects	How	When	Where
<b>For Potential Impacts:</b>				
Number of trained DAs and farmers.	WoA/IPMS/Regional EPA	Reports, field	6 monthly	OoARD/IPMS & activity site
Number and type of alternative uses demonstrated	OoARD/IPMS staff	Reports, field and market visits	6 monthly	OoARD/IPMS & activity site
Number of users of these new alternatives	OoARD/IPMS staff	Reports, field	6 monthly	OoARD/IPMS & activity site
Number of introduced species for this purpose	OoARD/IPMS staff	Reports, field	6 monthly	OoARD/IPMS & activity site
Area under these introduced species	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Number of coffee processing plants that use less water	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Number of farmers growing forages in their backyards	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Total area under improved natural pasture	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Number of farmers growing backyard forages	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Total area under improved natural pasture	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Number of trainings made regarding acquisition, application, accidents, storage and disposal of drugs and chemicals	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Existence of plans considering environmental health issues at wereda or town when allocating land for dairy, fattening and poultry	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
Existence of plans considering environmental health issues at wereda or town level when allocating land for dairy, fattening or poultry	OoARD/IPMS staff	Reports and field visits	6 monthly	OoARD/IPMS & activity site
<b>For Potential Cumulative Impacts:</b>				
Participation of Public Health representatives in training workshops	Regional/OoARD	Reports, field visits (physical observation)	6 monthly	Urban and peri-urban areas
Evidence that regulations are being enforced	OoARD/IPMS staff	Reports, field visits (physical observation)	6 monthly	Urban and peri-urban areas
Proportion of farmers engaged in exotic poultry production vs those in indigenous poultry production	OoARD/IPMS staff & activity site	Reports and field visits	6 monthly	OoARD/IPMS & activity site
<b>For Potential Impact of Environment on the Project</b>				
Number of watersheds properly managed or area covered	OoARD/IPMS staff	Reports, field visits	6 monthly	OoARD/IPMS & activity site
Number of farmers and DAs trained	OoARD/IPMS staff	Reports	6 monthly	Wereda OoARD
Number of farmers applying lime for acidity remediation	OoARD/IPMS staff	Reports	6 monthly	Wereda OoARD
Total area where lime is applied	OoARD/IPMS staff	Reports	6 monthly	Wereda OoARD

#### 4. Environmental Indicators

Note that the mitigating measure indicators listed in Tables (i) to (iii), and summarized in Table (iv), are designed to verify that the mitigating measures are being implemented as intended. It is not intended that the long-term effect of the mitigating measures on the environment should be formally monitored within the scope of the IPMS project, particularly as in most cases such 'state of environment' changes will be measurable only in the long-term. Such monitoring is normally the responsibility of the Wereda authorities. However, the IPMS staff concerned will be alert to any significant environmental change that may occur during the implementation of the programme.

There may be exceptions to this general rule. In the case of special topics of environmental concern on which IPMS is arranging for special research to be conducted, the monitoring will include actual environmental impacts. In the case of Goma Wereda, *The Potential Cumulative Environmental Impacts of the Promotion of Peri-Urban Zero-Grazing* is one such topic. Depending on the outcome of this research, additional environmental indicators may in due course be generated for inclusion in the regular monitoring programme outlined in the present EMP.

#### 5. Sources for the EMP

The sources of information used for this Environmental Monitoring Plan are as follows:

- The data provided in *Environmental Assessment and Screening Report, Goma Wereda*, June, 2009;
- The number visits made by the environmentalist also contributed to this;
- Consultation with Ato Yisehak Baredo (RDO) and Dadi Gelashe (RDA).