



Environmental and Social Management Plan (ESMP)

OBA for Municipal Waste Management in
Ghorahi Municipality

July, 2015

Prepared Jointly by
Ghorahi Municipality
and
**the JV of Multi Disciplinary Consultants (P) Ltd,
Nepalconsult (P) Ltd and DA Nepal (P) Ltd**



Social and Environmental Screening
OBA for Municipal SWM in Ghorahi Municipality

Environmental and Social Management Plan of Activities in Ghorahi Municipality

1. Introduction

The Environmental and Social Management Plan of Activities in Ghorahi Municipality has been conducted jointly by the Municipality and the JV of Multi Disciplinary Consultants (P) Ltd, Nepal Consult (P) Ltd and DA Nepal (P) Ltd during March 12-13, 2015 and based on the Environmental and Social Management Framework (ESMF) for OBA for Municipal Solid Waste Management in Nepal.

2. Project Description

The four-year Solid Waste Management Service Improvement Plan (SWP-SIP) has been established to support the long-term strategic objectives of the Strategic Plan and address the immediate challenges within existing SWM system in Ghorahi Municipality.

The objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP are:

- ✓ To extend the present service area to full coverage of ward 10 and 11 and to 30% of the population in ward 6
- ✓ To improve the service level provision through source segregation for up to 80% of households (2,500 HHs) in ward 6, 10 and 11 (including provision of compost bins, training of households, monitoring and follow up).
- ✓ To improve the existing landfill operation with daily leveling and covering of waste with soil and registration of waste at the entrance of the site
- ✓ To prepare new landfill cell (within existing perimeter) to be in compliance with national legislation (Application of 3 R and reducing waste to Landfill site).

1.1 Introduction and Background

Ghorahi municipality has total area of 74.45 km² and urban areas occupy approximately 13% of the area. Ghorahi Municipality has a total of 11 wards of which 2 is characterised as urban and 9 as rural. According to Population Census (2001), the population of Ghorahi Municipality was 43,124 and the number of households was 8,945. Approximately 45% of the population are living in urban wards and 55% in rural wards.

Collection services are provided by Ghorahi Municipality in the urban wards 10 and 11, and a peri-urban ward 6. The total waste collection is 29% of the total waste generation of 14.44 MT/day in the whole municipality. The waste collected is disposed in the landfill site. However, the operation of landfill needs to be well managed. No specific provisions for medical waste disposal is present, hence is one of the concerns.

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The following major challenges within existing SWM system in Ghorahi Municipality have been identified (Please refer TPIA-SWM SIP: Annex-6 for details).

- Limited collection and transportation service.
- Limited recycling and composting.
- Deficient treatment and disposal
- Inadequate Institutional set up for SWM.
- Insufficient information and awareness activities
- Financially unsustainable system.

1.2 SWM-SIP Activities

The SWM-SIP implementation is expected to require the following investments (supported by the four year service delivery subsidy under the OBA project):

- Service area extension to full coverage of ward 10 and 11 and to 30% of the population in ward 6 - thus requiring 2 new waste collection vehicles/ compactor trucks(capacity 5 MT each) – NPR 80 Lakhs
- Source segregation promotion up to 2,500 HHs, thus need of 2,500 bins for home composting pilot in wards 6, 10 and 11 – NPR 67.5 Lakhs
- Establishment of new landfill cell within the existing perimeter of the landfill site – NPR 60 Lakhs
- 1 backhoe loader with chains at the landfill – NPR 80 Lakh

The SWM-SIP implementation will furthermore require capacity building at municipality and TLOs level within the following areas (through SWMTSC supported by OBA project TA component):

- ✓ Preparation of ToRs for SWM committee and training of staff and TLOs
- ✓ Establishing operational manual for landfill and upgrading landfill management expertise
- ✓ Improving a monitoring, evaluation and performance management systems for SWM services
- ✓ Design and implementation of 3R activities including composting and utilization of compost and involvement of TLOs
- ✓ Design and implementation of IEC campaigns
- ✓ Finalization of contractual arrangements for involvement of TLOs in SWM
- ✓ Engage with hospitals/clinics and prepare strategy and action plan for dealing with medical waste
- ✓ Preparatory work (feasibility study and design) for developing new landfill cell adjust to existing one.
- ✓ Prepare occupational health and safety plan for municipal solid waste management
- ✓ Assessment of revenue potential and reorganization of tariff system

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Executive Officer



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3. Environmental and Social Management Plan

Scope of Environmental and Social Management Plan: The Scope covers potential impacts and mitigations related to activities supported under the OBA in Ghorahi Municipality and the activities/ aspects directly linked to the OBA support. These are summarized in Table below;

Objectives of ESMP:

The basic objectives of the EMSP are to:

- To ensure that all mitigation measures and monitoring requirements will actually be carried out at different stages of project implementation and operation - pre-construction, construction, and operation and maintenance;
- Recommend a plan of action and a means of testing the plan to meet existing and projected environmental and social problems;
- Establish the roles and responsibilities of all parties involved in the project's environmental and social management;
- Describe mitigation measures that shall be implemented to avoid or mitigate adverse environmental and social impacts and maximizing the positive ones;
- Ensure implementation of recommended actions aimed at environmental and social management and its enhancement; and
- Ensure that the environment and its surrounding areas are protected and developed to meet the needs of the local people, other stakeholders and safeguard the interests of the common people.


Tushen Singh K.C.
Executive Officer



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4. Overview of ESMP:

While trying to meet the KPIs (Key Performance Indicators), SIP (Service Improvement Plan) has to be implemented with several OBA interventions in the municipality. Following OBA interventions and related mitigation measures have been planned in relation to the existing status and potentials improvements in the Ghorahi Municipality.

OBA Interventions	Potential Risks	Existing Condition	Potential Measures	Mitigation	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
Increase in the collection service coverage	Increase in vehicular use for collection causing emission and traffic problems	- 2 tippers, compactor and power trailer operation; and a hired vehicle for excavation - Major concerns of vehicular emission does exist but increased number of vehicular movement may increase the emission	1 - Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle to replace existing random schedule 2 - Door to door collection and transport to be done early morning (5:30-9:30 AM) - Grievance Redress Mechanism will be in function	- No Additional cost - but as per SIP		- Municipality collection schedule & Route - Collection sites	for Year I: 2072	Environment and Social Development Section/Chief with TLOs for preparation of routes and schedules
Spillage of waste from collection vehicles during collection and transportation causing littering of waste in the streets		- Spillage during HH collection - Transportation without appropriate covering in the vehicle	- Avoid rough handling during House Hold (HH) collection. - Avoid overfilling of the vehicle during collection - Cover the waste during transportation to avoid	- Community Awareness Program (for 100 participants NPR 50,000)	- Collection sites - Transportation Routes	Regularly during collection and transportation		Waste Management Unit (Supervisor)

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Executive Officer



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OBA Interventions	Potential Risks	Existing Condition	Potential Measures	Mitigation	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
	and in the nature		- windblown litter - Inform households and other users about the waste collection system and the collection scheme. Encourage households and other users to put waste out at designated times and locations			Landfill site		
	Health impacts on workers	- No any risk & hazard identification - No any occupational health & safety plan do exists (Limited Personal Protective Equipment (PPE). Reluctance to use PPE. No provision for regular health checkup)	- Identification of potential risks & hazards - Preparation of Occupational Health & safety plan (Train NPR 500,000 workers of appropriate for preparation handling. Provide them with all necessary PPE) - Regular health check-up. Prompt medical attention for any hazards etc) - Pre-screening of health of swm workers - Health Insurance for waste workers			Reported cases in municipality (Environment Section)	FY:2071/72 for Occupational Health & Safety Plan Preparation	CEO/Environment and Social Development Section (Section Chief)
	Increased amount of waste to the landfill causing increased adverse environmental and social impacts to the environment around	Except in ward 6, no provision of source segregation. No recovery at source except animal feeding of kitchen waste. Very limited separation	- Intensely promote segregation at the Back source and HH level with composting chains. - Production of sellable recycle materials - Proper management of landfill site according to operation manual (this			Households	FY:2071/72	Environment and Social Development Section (Section Chief/Supervisor) in support of municipal engineer

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	the landfill.	recyclables/reusable at the landfill, possibly due to limited economic incentives for workers - A simple composting facility (screen to segregate organic fraction) at the landfill is worn out and not in use anymore - No any significant community issue observed	needs additional backhoe loader with chain)					
Segregation of waste at each household service area	Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing emission and traffic problems	- No provision for separate collection	- Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle - Early morning Door to door collection at core urban area. - Awareness campaign on Source Segregation of solid waste in HH/community level	No Additional Cost	Collection Schedules/Routes prepared by Municipality	FY-2071/72	Environment and Social Development Section chief in partnership with TLOs	

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OBA Interventions	Potential Risks	Existing Condition	Potential Measures	Mitigation	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
	Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route	- No provision for separate collection	- Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle. - Early morning Door to door collection at core urban area - Avoid overfilling of the vehicle collection during No Additional Cost - Cover the waste during transportation - Use of biological formulations for smell problem in transportation					Environment and Social Development Section chief in partnership with TLOs for preparation of routes and schedules
Introduction of composting system at household level	Spreading of plastic, glass and other unwanted materials in gardens etc. by misuse of compost (caused by incorrect sorting of waste prior to composting)	- Very limited HH level composting	- Compost management training - Regular monitoring of HH level composting - Regular handling of HH level composting		\$2,500 bins for home composting - HH level NPR 67.5 Lakh Compost Training (Follow up 100 participants) NRS. 200,000	Municipal records	FY:2071/72	Environment and Social Development Section chief for training management and preparation of regular monitoring schedules to HH in support of TLOs

Tuphan Singh K.C.
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Executive Officer



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	Possibility of nuisance due to improper handling (Spread of bad smell during the process of composting, Leachate) Possibility of Pathogenic spread	HHS started HH level composting are reluctant to continue because of the nuisance caused by improper handling	Use of EM enhance composting and to reduce odor Regular Monitoring through a social mobilizer - at least for 1 year)		NPR 200,000		FY:2072/73 onwards	
Reuse of waste papers and plastics for commercial production of useful materials	Contaminated materials may be infectious/hazardous to health	Separation of recyclables/Reusable items at disposal is ongoing	Use of segregated material Disinfection before use		No additional cost		FY:2071/72	Private Entrepreneur/NGOs in coordination of Environment and Social Development Section chief
Health hazard among the workers		Mix waste is observed in the landfill site	Train workers of appropriate handling and precautions		No additional cost	Municipal records		Environment and Social Development Section chief
Separate collection and disposal of medical waste	Increase in vehicular use for separate collection and disposal of medical waste Increased contamination of the	Mixed collection of medical waste from small medical service provider who mix the medical waste with MSW	Mandatory segregation at source in each Health Care Institutions (HCIs) with at least with three cost bucket system. Separate collection of only MSW portion from		No additional cost	Health Institutions During collection and transport	Care FY:2071/72	GEO for policy & coordination in support of local political parties Environment and

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Executive Officer



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	municipal waste		- the HCIs - Facilitate HCIs in establishing treatment system for infectious waste. - Separate schedule of collection from HCIs to avoid mixing of infectious (monitoring of waste composition)					Social Development Section chief for scheduling SWM unit supervisor for collection and supervision
	Health hazard to the workers	Mix handling might have cause hazard but none of the assessment has been done	- Identification of potential risks & hazards - Preparation of Occupational Health & safety plan (Train no workers of appropriate cost handling. Provide them with all necessary PPE. Regular health check-up. Prompt medical attention for any hazards)			Municipal records	FY:2071/72 for Occupational Health & Safety Plan Preparation	CEO/Environment and Social Development Section Chief in support of Account Chief
Managed landfill operation	Possibility of nuisance in community due to improper handling (Spread of bad smell during the process of	Gradually improvement is ongoing and it's in operation. Greenery has been addressed through plantation.	Following the landfill operation & mobilization of landfill operation steering committee including all the stakeholders assuring the local community participation, formation	No additional cost		Municipal records, field visit	FY:2071/72 onwards	Environment and Social Development Section Chief

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	- segregation at disposal and final disposal itself. Leachate spillage & percolation) - Increase in vector & flies causing public health hazards		of local coordination committee, deputiation of permanent landfill site staffs, regular covering)					
	- The functioning of the components of landfill site may gradually become less efficient - OHS concerns of the waste workers (7 waste pickers, and 1 guard)	- Trained human resources is not adequate - Some existing units are not functioning properly - OHS aspects need more strengthening	- Training to waste segregators - Maintenance of screening unit - More effective NRP composting to be carried and use of EM			Municipal records, field visit	FY:2071/72 onwards	Ghorahi Municipality
Construction of a new landfill cell within the approved landfill area and within the capacity	- During construction, some minor effects on local drainage. - Pollution of GurjeKhola, which is a	- The allocated landfill area is partly denuded, and has sparse vegetation - The land is barren, and no major river is present, but during monsoon, the	- Construction of main drainage, cross drainage and retaining walls - Abide by the previous NRP IEE recommendations during construction of support from the new landfill cell. - Proper disposal of spoil, proper compaction, liners and leachate collection and			Municipality's progress reports, Supervision and monitoring reports	FY:2072/73	Environment and Social Development Section, Ghorahi Municipality
						Municipality's progress reports	FY:2072/73	Ghorahi Municipality

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	monsoon rivulet and Sewarkhola - Concern of ground water contamination - Concerns of OHS for construction workers and health concerns for locals during operation	rivulets may be polluted	treatment system - Plantation			Supervision and monitoring reports		
	- The existing landfill site is in operation		Provisions of PPEs, specific guidelines to work within existing landfill site, mobilization of landfill management committee			Municipality's progress reports Supervision and monitoring reports	FY:2072/73	
Encouragement of private sector in waste segregation, reuse and recycling	- Environmental pollution likely due to improper collection, transfer and waste handling - Health hazard among the workers		- Safe practices and Operational Manuals to be implemented by private service providers - OHS plans should be applied by private service providers			Annual reports, monitoring reports of facilities operated by private sector		Municipality and private service providers
								Municipality and private service providers

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Tuphan Singh KC
Tuphan Singh KC
Executive Officer



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ESMP Monitoring format

Date of Monitoring Data Collected By:

Verified by: Approved by:

OBA Interventions	Potential Risks	Area	Are ESMP mitigations measures / management actions implemented and acceptable environmental and social conditions established?		Comments/ recommendations, e.g. re additional studies / information / actions required
			Yes/No	Description	
Increase in the collection service coverage	Increase in vehicular use for collection causing emission and traffic problems				
	Spillage of waste from collection vehicles during collection and transportation causing littering of waste in the streets and in the nature				
	Health impacts on workers				
	Increased amount of waste to the landfill causing increased adverse environmental and social impacts to the environment around the landfill.				
Segregation of waste at each household in service area	Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing emission and traffic problems				
	Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route				
Introduction of composting	Spreading of plastic, glass and other unwanted materials in gardens etc. by use of compost (caused				

Tuphat
Tuphat K.C.
Executive Officer



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system at household level	by incorrect sorting of waste prior to composting)				
	Possibility of nuisance due to improper handling (Spread of bad smell during the process of composting, Leachate)				
Reuse of waste papers and plastics for the commercial production of useful materials	Contaminated materials may be hazardous to health				
Encouragement of private sector in waste segregation, reuse and recycling	Being too much commercial, they avoid to abide by the environmental protection laws and precautions				
	Because of use of certain area as transfer site, there will be land, water, air and visual pollution				
	Health hazard among the workers				
Separate collection and disposal of medical waste	Increase in vehicular use for separate collection and disposal Increased contamination of the municipal solid waste Health hazard to the workers				
Construction of new landfill cell	Possibility of impacts on drainage, vegetation and rivulets Air pollution, littering, noise & some possible social friction during construction (Might be Minimum).				
Managed landfill operation	- Possibility of nuisance in community due to improper handling (Spread of bad smell during the process of segregation at disposal and final disposal itself, Leachate spillage & percolation) - Increase in vector & flies causing public health hazards Landfill site operation blockade from local residents				

Tuphan Singh K.C.
Tuphan Singh K.C.
Executive Officer

