

Environmental and Social Management Plan of Activities in Tansen Municipality

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

- Actual delivery of the present formal collection service level in the existing urban and peri-urban service areas;
- Increase coverage of the existing well-functioning door-to-door blue bin system in existing service areas;
- Extending services into the non-serviced areas in wards 3, 9, 10, 11, 14 (bordering on existing service areas) where households have stated interested and willingness to pay and piloting TLOs as customers in these areas to facilitate customer responsive service and high tariff collection ratio;
- Reduce waste to landfill through 500 household pilot scheme on ISWM including three bin source separation pilot (organic, inorganic and hazardous), promotion of 3R and provision of training;
- Use organic waste from source separation to supplement market waste under parallel community composting project implemented with SWMTSC, and extend home composting pilot (for households with own land) to reduce waste to landfill, but support with both training upon inception and monitoring during implementation;
- Establish operating manual for new landfill in cooperation with SWMTSC to support improved and environmentally acceptable operation at the site;
- Institutional strengthening of the municipal administration on SWM; and
- Increased information and raising awareness.

1.1 Introduction and Background

Population of Tansen municipality is 31,161 as per census 2011 and the population density (person per Km²) 1,435. As per ADB report on Solid Waste Management in Nepal, 2013, Average household waste is 1.19 Kg/day and household size is 5.22 so average per capita household waste is 228.12 g/capita/day. From this figure the total household waste of the municipality is 7.11 tons/day. Similarly commercial and institutional constitutes 4.30 tons/day and 0.43 tons/day respectively. Based on above figure average per capita Municipal Solid Waste is 379.91 g/capita/day. Composition of household waste constitutes organic 44.18 %, recyclables 31.82 % and textile, rubber/leather and other 24.01 %. Solid waste collection services is being provided by the municipality and Road side pickup, container based collection and door to door collection is in practice. In core urban area waste collection service is daily whereas in outer area it is once in the week. With the implementation of OBA

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project schedule wise waste collection system has been practiced for segregated waste collection. With the lack of composting and Material Recovery Facility all the segregated waste is being dumped in dumping site. Although municipality has landfill site operation of landfill site was obstructed and closed by the local residents due to mismanagement. Municipality has initiated dialogue to the local residents for re-opening of landfill site for effective solid waste management.

Although, the Health Care Institutions (HCIs) are legally mandated to manage their waste, directly/indirectly it is being mixed with municipal waste and local HCIs lack the capacity, system and minimum infrastructures required for health care waste management. It also has exacerbated the toxicity of the waste.

The following major challenges within existing SWM system in Tansen have been identified (See 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):

- 1 new waste collection vehicle (small compactor truck of a type with track record from cities with similar topography) to support the increase in service provision and 3R activities – NPR 40 Lakh
- 2,000 blue waste collection bins with lid – NPR 6 Lakh
- 1,500 bins for three-bin source separation pilot – NPR 5 Lakh
- 200 bins for home composting pilot – NPR 4 Lakh
- 100 litter bins in market area – NPR 1 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):

- Establishing operational manual for landfill and upgrading landfill operations and management expertise;
- Improvement of billing and revenue collection systems for SWM services;
- Establishing a monitoring, evaluation and performance management systems for SWM services;
- Design and implementation of 3R activities;


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- Design and implementation of IEC campaigns;
- Design of appropriate contractual arrangements for involvement of NGOs or community based organization (TLOs).

2. Environmental and Social Management Plan

Scope of Environmental and Social Management Plan: Scope covers potential impacts and mitigations related to activities supported under the OBA in Tansen 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.


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3. Overview of ESMP (Table):

While trying to meet the KPIs (Key Performance Indicators), SIP (Service Improvement Plan) has to be implemented with several OBA interventions in the municipality

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
Increase in the collection service coverage	<p>Increase in vehicular use for collection causing emission and traffic problems</p> <p>Spillage of waste from collection vehicles during collection and transportation causing littering of waste in the streets and in the nature</p>	<p>– 1 Tractor/1 Tripper/ 1 JCB</p> <p>– No significant vehicular congestion is observed in existing</p> <p>– Vehicular emission does exist but increased number of vehicular movement may increase the emission</p> <p>– Spillage during HH collection</p> <p>– Transportation without or inappropriate covering</p>	<p>– Use of well-planned schedule replaced by existing random schedule considering the volume of waste reducing unnecessary movement of vehicle</p> <p>– Door to door collection and transport to be done early morning (5:30-9:30 AM)</p> <p>– Avoid rough handling during House Hold (HH) collection.</p> <p>– Avoid overfilling of the vehicle during collection</p> <p>– Cover the waste during</p>	No Additional Cost	<p>– Municipality for collection schedule & Route</p> <p>– Collection sites</p>	1st October 2015	<p>Environment section chief in partnership with TLOs for preparation of routes and schedules</p> <p>SWM Unit supervisor for collection operation and monitoring</p> <p>Regularly during collection and transportation.</p> <p>Solid Waste Management Unit (Supervisor)</p>

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			transportation to avoid 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				
		- 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 workers of appropriate handling, Provide them with all necessary PPE, Regular health check-up, Prompt medical attention for any hazards etc)	500,000 for preparation of OHS Plan	Reported cases in municipality (Environment Section) Monitoring the waste handlers during collection and treatment	1st December 2015	CEO/Environment Section (Section Chief)
Health impacts on workers							
Increased amount of waste to the landfill causing increased adverse environmental and social impacts to	- Source segregation into 3 different categories is in place. - Separate of collection system is	- HH level composting - Production of sellable recycle materials - Prepare Waste	Preparation of Households Master Plan for Waste Recovery Center: NRS 400,000	Recovery center (Proposed)	Landfill Site	1 st Jan 2016	Environment Section (Section Chief/Supervisor) in support of municipal engineer

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	the environment around the landfill.	<ul style="list-style-type: none"> - in place - No any recovery initiatives - Landfill has been shut down by local affected community in issue of operational deficiency. - Improper covering, causing nuisance was observed. 	<ul style="list-style-type: none"> - Recovery plan - Establishment of Waste Recovery center - Proper management of landfill site according to operation manual 	Establishment of Waste Recovery Center- 600,000			
	<ul style="list-style-type: none"> - Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing emission and traffic problems 	<ul style="list-style-type: none"> - Provision for separate collection schedules exists 	<ul style="list-style-type: none"> - Updated schedule considering the volume of waste reducing unnecessary movement of vehicle - Early morning Door to door collection at core urban area. 	No Additional Cost	Collection Schedules/Routes prepared by Municipality	1st October 2015	Environment section chief in partnership with TLOs
Segregation of waste at each household in service area	<ul style="list-style-type: none"> - Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route 	<ul style="list-style-type: none"> - Provision for separate collection schedules exists 	<ul style="list-style-type: none"> - Updated schedule considering the volume of waste reducing unnecessary movement of vehicle - Early morning Door to door collection at core urban area 	No Additional Cost		1st October 2015	Environment section chief in partnership with TLOs for preparation of routes and schedules SWM unit supervisor for collection arrangement and

			<ul style="list-style-type: none"> - Avoid overfilling of the vehicle during collection - Cover the waste during transportation - Use of lime/Effective microorganism for smell problem in transportation 				others
	Spreading of plastic, glass and other unwanted materials in gardens etc. by use of compost (caused by incorrect sorting of waste prior to composting)	<ul style="list-style-type: none"> - Very limited HH level composting 	<ul style="list-style-type: none"> - Compost & management training - Regular monitoring 	Compost Training (Follow up 110 participants) NRS. 350,000	Municipal records	1st July 2015	Environment section chief for training management and preparation of regular monitoring schedules to HH in support of TLOs
Introduction of composting system at household level as well as in community level	<ul style="list-style-type: none"> - Possibility of nuisance due to improper handling (Spread of bad smell during the process of composting, Leachate) 	<ul style="list-style-type: none"> - HHs started HH level composting are reluctant to continue because of the nuisance caused by improper handling 	<ul style="list-style-type: none"> - Use of source segregated material - Disinfection before use 	No additional Cost		1st October 2015	Private entrepreneur/NGOs in coordination of Environment section chief
Reuse of waste papers and plastics for the commercial production of useful materials	Contaminated materials may be hazardous to health	<ul style="list-style-type: none"> - Separation of recyclables/Reusable at disposal is under trial 	<ul style="list-style-type: none"> - Improvement and operation of existing facility at landfill site as a waste recovery 		Landfill site	1st July 2015	Environment Section Chief in support of engineer and supervisor
Encouragement of private sector in waste segregation, reuse and	Being too much commercial, they avoid to abide by the environmental protection laws	<ul style="list-style-type: none"> - Separation of Recyclables/Reusable at disposal is under trial 					

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recycling	and precautions	No any transfer station or recovery station do exists.	center - Regular and strict monitoring by municipality - Limitation and high fencing of the transfer site				
	Because of use of certain area as transfer site, there will be land, water, air and visual pollution	Recommendation has been made from experts to add the resource recovery center.					
	Health hazard among the workers	-	- Train workers of appropriate handling and precautions - Mandatory Source segregation at source in each Health Care Institutions (HCIs) at least with three bucket system. - Separate collection of only MSW portion from the HCIs - Facilitate HCIs in establishing treatment system for infectious waste. - Separate schedule of collection from HCIs to avoid		Municipal records	1 st December 2015	Environment Section chief
		- Mixed collection of medical waste with MSW			Health Care Institutions During collection and transport	1 st December 2015	CEO for policy & coordination in support of local political parties Environment section chief for scheduling SWM unit supervisor for collection and supervision
	Separate collection and disposal of medical waste	Increase in vehicular use for separate collection and disposal					



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	causing public health hazards - Landfill site operation blockade from local residents		formation of local coordination committee, deputation of permanent landfill site staffs, regular covering)				
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Note: EM = Effective Microorganism; we can also use 'Jibatul' for the same purpose.

4. ESMP Monitoring Table.

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				


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	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.				
	Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing emission and traffic problems				
Segregation of waste at each household in service area	Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route				
	Spreading of plastic, glass and other unwanted materials in gardens etc. by				


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Introduction of composting system at household level as well as in community level	use of compost (caused 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	-			

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	collection and disposal				
	Health hazard to the workers	-	-		
Mandatory 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	-	-		

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