



Government of Nepal  
Ministry of Urban Development  
Solid Waste Management Technical  
Support Center  
Shreemahal, Pulchowk Lalitpur, Nepal



# Nepal OBA SWM SIP

## Draft Solid Waste Management Service Improvement Plan (SWM-SIP)

### Lalitpur Sub-Metropolitan City

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**Submitted by Joint Venture**



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## 1. Introduction

The World Bank / GPOBA and the Government of Nepal are implementing the 'Output Based Aid (OBA) for Municipal Solid Waste Management Project' which aims to improve access to high quality and financially sustainable SWM services in participating municipalities through the provision of a performance-based service delivery subsidy to support gradual improvements in cost recovery in parallel with service quality improvements over a four-year period. The Solid Waste Management Technical Support (SWMTSC) and the Town Development Fund (TDF) are jointly providing technical and project management support to the Participating Municipalities to implement the activities covered by the OBA grant.

After piloting the concept in two small hill towns (Tansen and Dhankuta), a second batch of three larger municipalities (Pokhara, Lalitpur and Ghorahi) are now being targeted. These municipalities have recently developed their long term Solid Waste Management (SWM) strategic plans, but they still lack a focused plan to translate the strategy into actions and initiatives aimed at improving the quality and financial sustainability of SWM services. The municipalities therefore need support in preparing Solid Waste Management Service Improvement Plans (SWM-SIPs).

The present report is a Draft Final SWM-SIP for Lalitpur Sub-metropolitan City. The Draft Final SWM-SIP is based on the SWM strategic plan for Lalitpur Sub-metropolitan City<sup>1</sup>, the ADB report from 2013<sup>2</sup> and adjusted and supplemented with findings from meetings and discussions with the municipality and other stakeholders in December 2014, February 2015 and September-November 2015. The SIP report is also based on the Situation Analysis Report -Lalitpur<sup>3</sup> And Household gap survey<sup>4</sup>.

## 2. Socio-economic background data

This chapter presents a brief overview of socio-economic data for Lalitpur Sub-metropolitan City. A detailed description is provided in **0**.

### 2.1 General description of the area of Lalitpur Sub-metropolitan City

Lalitpur is a Sub-metropolitan City (LSMC) located in the south-east of Kathmandu at Central Development Region of Nepal. With its urban history dating back as far as 2000 years, LSMC is one of the three major cities located inside the Kathmandu valley, besides Kathmandu and Bhaktapur. The total area of LSMC is 24.98 km<sup>2</sup> and it comprises of 30 urban wards, out of which 8 wards are newly merged from 3 VDCs - Sunakothi, Dhapakhel and Harisiddhi. The Map of extended LSMC is provided in Figure 1.

The population density is 10,213 persons/SqKm<sup>5</sup> and the altitude of the city varies from a minimum of 1266 m to a maximum of 1366 m. The warmest month, on average, is June with an average temperature of 22.8°C. The coolest month on average is January, with an average temperature of 8.9°C and receives yearly average rainfall of 2000-2400 mm.

### 2.2 Population and households

According to Population Census of 2011<sup>6</sup>, the total households and population of the Lalitpur Sub-metropolitan City (as per CBS 2011, and incorporating the added 8 wards) in 2011 were 62,893 and 254,308 (See Table B3) respectively with approximately 3.35% population growth rate.

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<sup>1</sup> Solid Waste Management and Technical Support Centre (SWMTSC) of Nepal. Final Report, Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City Engineering Study & Research Centre (P) Ltd, January 2014

<sup>2</sup> Solid Waste Management in Nepal, Current Status and Policy Recommendations, Asian Development Bank (ADB), 2013

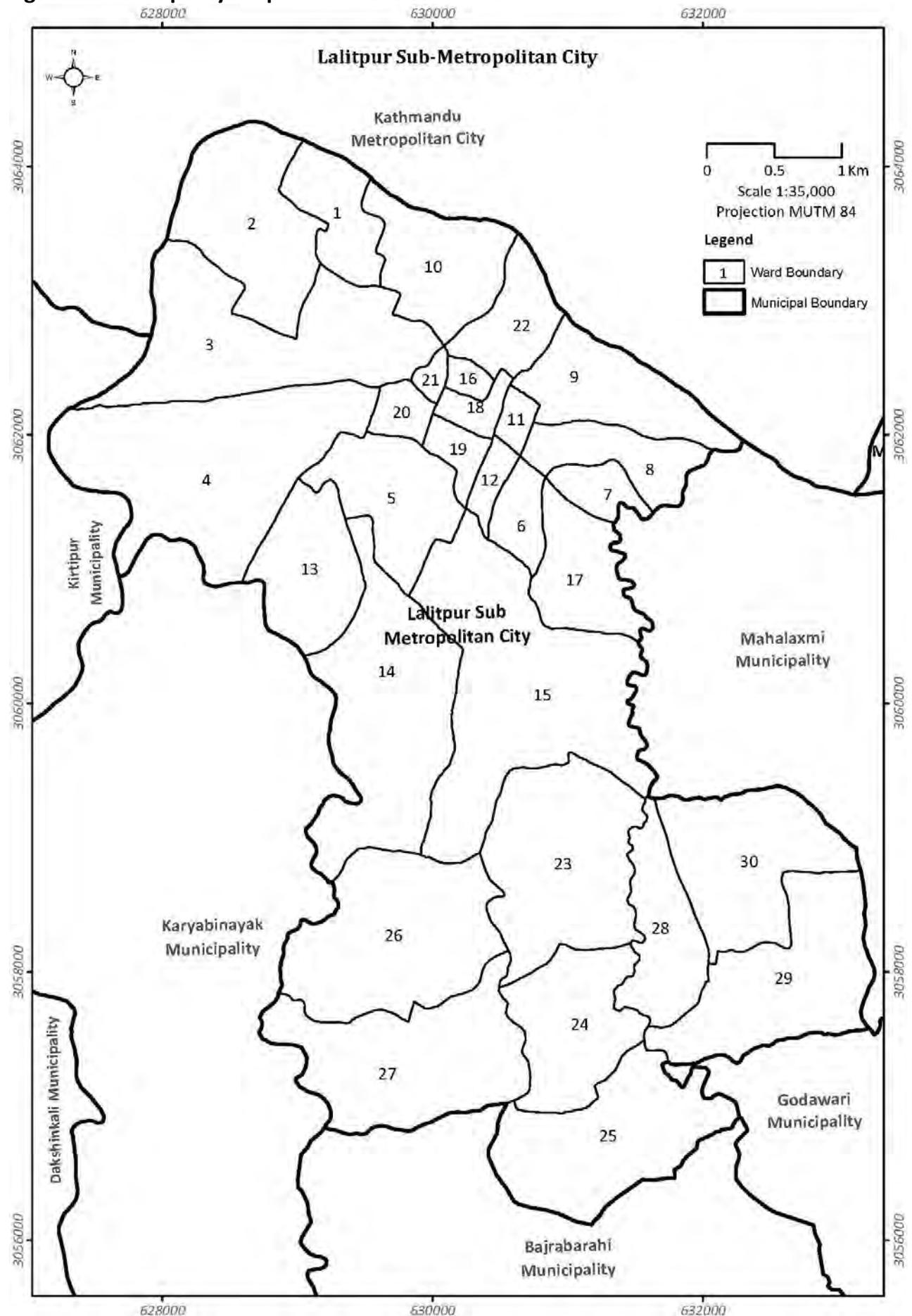
<sup>3</sup> World Bank / TDF / SWMTSC project - Nepal OBA SWM SIP. Revised Situational Analysis Report – Lalitpur, 2015, MULTI/NC/DA

<sup>4</sup> World Bank/TDF/SWMTSC/SIP Consultant, Household Survey, July 2015

<sup>5</sup> Local Governance and Community Development Project (LGCDP), MOFALD, 2015

<sup>6</sup> National Population and Housing Census 2011 (National report), Volume 01, Central Bureau of Statistics, November 2012

**Figure 1: Municipality Map with Extended Wards**



### 2.3 Industrial and commercial activities

There is only one industrial estate within LSMC and is situated at Patan Industrial Estate, Lagankhel. There are about 150 industries in total in LSMC including 106 in Patan Industrial state. There are also numerous cottage industries (848), including handicraft and metallurgy factories. There are 13 big hotels with world standard services and facilities and a number of small hotels. Altogether, more than 100 hotels and restaurant are located in LSMC, which generate significant amount of waste.

There are a number of commercial and institutional facilities that generate significant waste. The account of industries, commercial organisations and institutions is provided in Table 1.

**Table 1: Number of Industries, commercial establishments and institutions**

SN	Institutional/Commercial facilities	
1	Educational Institutions	212
2	Health institutions	38
3	Sports and recreation	11
4	Government offices	49
5	International Organization/Institutions	14
6	Banks	19
7	Major Hotels	13
8	Major Super Markets	5
9	Vegetable Market	3
	Total	364

*Source: Solid Waste Management Technical Support Center (SWMTSC), Baseline Survey, June 2012*

## 3. Description and analysis of existing situation on solid waste management

### 3.1 Methodology and data collection

The Lalitpur Sub Municipal City (LSMC) SWM Strategic Plan (January 2014) has been approved by the Municipal Council. This SWM-SIP is based on the SWM strategic plan for Lalitpur Sub Municipal City, the ADB report from 2013 on Current Status and Policy Recommendations for Waste Management in Nepal, Household Survey (2015) conducted by SIP consultancy team, and adjusted and supplemented with findings from meetings and discussions with the municipality and other stakeholders in December 2014, February 2015, April 2015 and November 2015 as reported the revised Situation Analysis Report - Lalitpur, 2015, and the Household Survey of July 2015 carried out to capture data gap.

Review of literature, consultations with stakeholders, household survey and data analysis were carried out during this study. The study is based on the methodology detailed in the Inception Report, and formats are provided in Attachment 5.

### 3.2 Waste generation and composition

Basis for estimation of waste generation and composition is described in 0. From the field survey in 2012 in the ADB project the average unit waste generation from households in Lalitpur was found to be 0.186 kg/capita/day<sup>7</sup>. Based on analysis and findings in the field survey it was estimated that nearly the same amount was generated from the institutions and commercial sector resulting in per capita generation of municipal solid waste (household waste, commercial waste and institutional waste) of 0.372 kg/capita/day. The total municipal waste generation in 2011 amounts to 84.5 MT/day. Using the same per capita generation, the 8 new wards (three added VDCs) will generate approximately 14.22 MT waste per day in 2015, and approximately 16.22 MT waste per day in 2019. The total waste generation in LSMC increases from 110 MT/day in 2015 to 126 MT/day in 2019 (SWM-SIP planning period).

The waste composition found in the ADB survey is prepaented in Table 2:

<sup>7</sup> Solid Waste Management in Nepal, Current Status and Policy Recommendations, Asian Development Bank (ADB), 2013

**Table 2: Waste Composition in LSMC (ADB 2012)**

Waste type	Organic waste	Plastic	Paper	Glass	Metal	Textiles	Rubber /leather	Others
	%	%	%	%	%	%	%	%
Household waste	79	10	5	2	0.5	1	1	1.5
Institutional waste	13	23	43	1	1	-	1	18
Commercial waste	38	23	30	1	-	-	-	8
Average	57	16	18	1.5	0.5	0.5	0.5	6

### 3.3 Existing Practice of Source Segregation

The existing waste management at household level is characterised by the source segregation currently practiced by over 70% in 30 wards (Attachment 5). Particularly, the pilot wards practicing Source Segregation were ward Nr 22 and ward Nr 138.

Several small PS/NGOs are engaged in the awareness building and providing education to the households at ward level and selected Toles.

The SWM Act 2011 has put a significant weightage on source segregated waste management practice, prevention of burning the waste and disposal in open space and nature<sup>9</sup>, and allowing disposal of residual waste to Landfill site.

### 3.4 Existing solid waste collection, street cleaning and transportation system

#### Collection and Transportation

The existing solid waste collection, street cleaning and transportation system is described in 0. A brief overview of the system is given as follows:

Collection services are provided, directly or through private sector, in all 30 wards. LSMC is directly provided services in 11 wards and 14 private operators<sup>10</sup> are providing services in remaining 19 wards, and is of partial nature. The private operators have no written agreement with LSMC, there is no regulation of tariffs charged by private sector service providers, and there is no framework for reporting of operational data to LSMC.

Similarly, there is no framework for reporting on grievances of the consumers on the quality of services provided by the private operators.

The collection of waste from the households is primarily based on the mixed waste. Frequently, the source segregated waste is again mixed in the collection vehicle operated by the municipal or PS/NGO. But the practice of collection of source segregated waste by the individual waste collectors, municipal and PS/NGO vehicles is in the rise. There is no formal and regulated method of waste collection by the municipal and PS/NGO collectors.

Institutions, supermarkets and hospitals have individual written agreements with LSMC for waste collection. Industrial and medical Waste from Hospitals is not considered whereas the medical waste from smaller clinics is not separated from the municipal waste during collection.

There is no consistent waste recording system in LSMC. Although the larger operators do record waste volumes based on the number and size of trucks, both the volume assessment and the subsequent conversion to weight is surrounded with significant uncertainties as trucks may be partly filled and waste density varies considerably between operators. The collector vehicles are not subjected to weighing system since the transfer stations are not equipped with weighing bridges and not properly designed for. The weigh bridge installed in the Landfill site also was broken and not replaced.

<sup>8</sup> ADB/SWMTSC, Baseline Survey of Solid Waste Management in LSMC, 2012

<sup>9</sup> Badan Lal Nyachhyon, Zero waste – New Culture for New Century, Waste Concern 2006

<sup>10</sup> CKV 2004 reported about 30 operators working in LSMC.

Based on households served and truckloads recorded by the operators, the total collection in Lalitpur is assessed to 85 MT/day of which 55 MT/day is collected by LSMC, while the remaining 30 MT/day collected by the private sector, namely NEPCEMAC, Sirjansil, and WEPCO. This does not include the unknown but relatively limited waste volume collected by other small private operators. These figures are contested by the private operators as incorrect ones.

Based on the estimated waste generation of 112.5 MT/day (93MT/day for 22 wards, COWI, 2015) and waste collection of 92 MT/day (85 MT/day for 22 wards, COWI, 2015) in 2015 the collection efficiency in Lalitpur is approximately 82% (91% for 22 wards, COWI, 2015).

The inclusion of 8 new wards will require that approximately 32,000 inhabitants in the new peri-urban areas are provided with waste collection services as soon as possible.

The Household survey 2015 indicated the total waste generation in 30 wards as 74.22 T/day, which is about 15% less than previous report. However, there is difference in opinion among the municipality and private sector operators about the actual quality of waste handled by them. A separate exclusive survey may be required to determine the actual waste handling carried out by them.

The current practice is the collection of mixed waste. Frequently, the source segregated waste is again mixed during collection in the transport vehicles, if some enthusiast collectors, including the municipal drivers, keep the waste segregated. This practice has significantly reduced the 3R practice and needs a radical change in the collection method.

There has emerged a need to introduce a new approach of waste collection. Particularly, the need is based on the concept to collect the segregated waste in two ways: 1) Biodegradable waste to be collected every day using green color vehicles and other segregated waste by designated days. The collection days are indicated in following Table 3.

**Table 3: Collection of waste by fractions by designated days**

SN	Fraction of Waste	Proportion, %	Designated Days	Remarks
1	Organic waste	57	Sunday-Friday	
2	Plastic	16	Sunday-Monday	
3	Paper	18	Tuesday-Wednesday	
4	Glass	1.5	Thursday	
5	Metal	0.5	Thursday	
6	Textiles	0.5	Thursday	
7	Rubber/leather	0.5	Thursday	
8	Others	6	Friday	
9	Total	100		

Note: Special waste as dead animals shall be collected immediately

### Transport Fleet and staffing

Table 4 below provides an overview of the vehicle fleet and staff of LSMC and the four largest private operators.

**Table 4: SWM collection vehicle fleet in LSMC**

Operator	Vehicles	Staff
LSMC	12 tipper vehicles (3.5 m <sup>3</sup> ) and two tractor/trailer (2.3 m <sup>3</sup> ) for primary collection, 4 vehicles (15 m <sup>3</sup> ) for secondary transport	213
NEPCEMAC	5 trucks, 1 mini-truck, 11 tractors, 90 tricycles	300
Sirjansil	1 truck, 4 power trailers, 1 tractor, 10 tricycles	80
WEPCO	1 van, 8 tricycles	40

All five operators provide street sweeping in their service areas. The four PS operators provide door-to-door collection, bring-to-truck collection, composting and recycling services, The Waste collection route in LSMC is indicated in Figure 2.

**Figure 2: Collection Route of LSMC for Primary Collection**

Route	Route Discription	Vehicle Type
	Garage- Mangal Bazar-Mapal-Gahabal-Natole-Balkhu- Sundarighat	
	Sundari Ghat-Ringroad-Ekantkuna-Jawalakhel- Lagankhel	
	Lagankhel-Lagankhel-Prayagpokhari-Balkhu-Sundarighat	Triper
1	Sundarighat-Ringroad-Ekantkuna-Jawalakhel- Pulchoke-Patandhoka	( Eicher-10.
	Nagbahal-Kanibahal-Balkhu-Sundari Ghat	6 G) Vehicle
	Sunadrai Ghat-Ekantkuna-Satdobato-Sichahit	no 791.
	Sichahiti-Kanibahal- Balkhu- Sundari Ghat	
	Sundarighat-Ekantkuna-Satdobato-Gwarko- LSMC Garage.	
	Garage- Mahapal-Balkhu-Bhimsensthan-Adarskanya-Thalyacha-Sundarighat	
2	Sundarighat-Ringroad-Sanepa-Bagdole- Pucchok-HariharBhawan-Krishnagalli	Tripper (199
	Krishnagalli-Patan Buspark-Shankhamul-Setuganesh-Kumbheswor-Sundarighat	B) Vehicle
	Sundarighat-Ringroad-Sanepa-Jawalakhel- Pulchoke-Patandhoka-Ashok Hall	NO 803
	Ashok Hall-Chandi Bidhyalaya-Swati Narayan-Sundari Ghat	
	Sunadrai Ghat- Bagdole-Ekantkuna-Jawalakhel-Gwarko-Garage	
	Mangalbazar- Haungal-Ibab-Tangal-Sundarighat	Tripper
	Sundarighat-Ringroad-Bhanimandal-Jawalkhel-Lagankhel-Loksi.	(10.60 G)
3	Loksi-Loksi-Sundarighat	Vehicle no
	Sundarighat-Ringroad- Bhanimandal-Jawalkhel-Lagankhel-Thatitol	
	Thatitol-Prayagpokhari-Prayagpokhari-Thaina-Sundari Ghat	
	Sunadrai Ghat-Ringroad-Jawalkhel-Garage	
	Garage- Mahapal-Balkhu-Bhimsensthan-Adarskanya-Thalyacha-Sundarighat	
	Sundarighat-Ringroad-Sanepa-Bagdole- Pucchok-HariharBhawan-Krishnagalli.	Tripper
4	Krishnagalli-Patan Buspark-Shankhamul-Setuganesh-Kumbheswor-Sundarighat	
	Sundarighat-Ringroad-Sanepa-Jawalakhel- Pulchoke-Patandhoka-Ashok Hall	
	Ashok Hall-Chandi Bidhyalaya-Swati Narayan-Sundari Ghat	
	Sunadrai Ghat- Bagdole-Ekantkuna-Jawalakhel-Gwarko-Garage	
	Garage- Balkhu-Sundarighat	
	Sundarighat-Mahalaxmi.	
	Mahalaxmi-Sundarighat	
	Sundarighat-Dhalaut Industry	
5	Dhalaut Industry-Mahalaxmi-Sundari Ghat	Super Placer
	Sunadrai Ghat-Balkhu	Vehicle no
	Balkhu-Sundari Ghat	349
	Sunadrai Ghat-Kupandole	
6	Kupandole-Sundari Ghat	Triper
	Sunadrai Ghat-Lagankhel	Vehicle no
	Garage- Pulchoke-Harihar Bhawan-Kupandole-Harihar	3354
	Sundarighat-T Dhoka	
	T Dhoka-Nagal-Khawali-Nagal-Sundarighat	
	Sundarighat-Ihiti	
	Ihiti-Machhendra Dev-Ichapo-Ikhalakhu-Mahapal-Sundari Ghat	
	Sunadrai Ghat-Garage	

The Private Sector has a practice of collecting a tariff of 75 - 300 NPR/month/household for their service. The municipal operator provides roadside collection and bring-to-truck collection and does not charge<sup>11</sup> for the service.

### Segregation and Transfer station

LSMC operates one segregation and transfer station where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at the Okharpauwa landfill (jointly operated by Kathmandu and Lalitpur), 43 km from the city. It is noted that there is room for improvement of the design and operation of the segregation and transfer facility as residuals are stored overnight in the transfer vehicles or at the sorting facility (good practice requires that residuals are not stored at the facility overnight). Old worn out vehicles are also stored at the transfer station and occupying space at the facility.

The four largest private service providers each have their own segregation and transfer stations and vehicles for transport from the transfer station to the Sisdole landfill. The PS operators have composting and recycling facilities in their transfer stations.

### 3.5 Existing solid waste recycling system

The existing solid waste recycling system is described in 0. A brief overview of the system is given herewith. herewith: .

LSMC has successfully implemented an ambitious pilot project in Ward 22 (10,100 people in 2,460 households) and in ward Nr 13 on sustainable waste management, with household segregation, composting and reuse. The project involved recovered materials being purchased by women's groups supported by the municipality and resulted in only limited need for residual waste collection. LSMC plans now for expansion of the project (Segregation at Source) to Ward 9, 16 and 18. The Household survey 2015 indicated that over 70 % of households in all 30 wards practice source segregation. This information needs to be verified with more detailed survey.

Furthermore, under a recently signed EU funded project 12,500 households are being equipped with segregation bins and compost bins<sup>12</sup>. The project also includes piloting of rooftop gardening, as well as three compost plants (3 MT/day each) and one biogas plant for slaughterhouse waste (½-1 MT/day out of a total of 2 MT/day).

Some NGOs and private operators have also conducted waste segregation pilots. NEPCEMAC has a 1,200 household segregation pilot in KTM, and WEPCO has a 200 household segregation pilot in Lalitpur. The municipal operator and the largest private service providers carry out manual separation of recyclables at their segregation and transfer facilities. The three largest private operators recover and recycle around 19 MT/day (35% of collected volume) through manual sorting. At the municipal transfer station the assessed recycling is in the order of 3 MT/day (5% of collected volume). No mechanical material recovery facility (MRF) is in operation.

With above recycling initiatives and the informal recycling by waste pickers Lalitpur municipality expects to meet the targets in the Strategic Plan on 40% recovery of organic waste and 40% recovery of recyclable fraction in 2018, see Section 0

The Kathmandu Valley waste recovery and recycling market is large and dynamic with an estimated 800 scrap dealers (Kawadis) of which around 115 are in Lalitpur, NGOs and women's groups, as well as at least 8,000 informal waste workers (identified by the PRISM Project / Practical Action and EU, 2014).

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<sup>11</sup> The Municipality had decided to Charge at least NPR 182 perhousehold/year (Attachment 5)

<sup>12</sup> There are two types of compost bins used. The compost bin distributed by LSMC is with aeration holes all around the compost bin whereas the bin distributed by ZeroWaste Nepal has no aeration holes in the body but equipped with aeration pie inside the bin.

### **3.6 Existing treatment and disposal of solid waste**

All residual waste is disposed at the existing Okharpauwa landfill 43 km from the city which is operated jointly by Kathmandu and Lalitpur on an 80-20 cost sharing basis.

LSMC is not actively involved in landfill operation but they do provide one loader including operator and one sprayer with driver in addition to 20% cost of landfill operation. The 20% cost sharing on the landfill was calculated based on quantity of waste at beginning of landfill operation. It was assumed that waste quantity is 60 MT/day from Lalitpur and 300 MT/day from KMC. Lalitpur contributes 4-5 million NPR/year for landfill operation. However, the SWMTSC waste delivery survey of October 2014 at Sisdole LFS assessed the final waste disposal as 193.76 Ton/day, which is much less than the above figures.

It shall also be noted that a significant quantity of waste is incinerated in open air at community level creating air pollution and environmental hazard.

There is no tipping fee at the landfill and both private operators and public operators can access and deliver waste directly to the landfill site.

There is no operational material recovery or composting facilities at the landfill site. The existing landfill has only limited remaining capacity and the long term landfill situation is unclear<sup>13</sup>. Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

### **3.7 Special waste collection, treatment and disposal**

There are over eighteen major hospitals in the whole district of Lalitpur with a total bed capacity of 282 (1,000?) . The hospitals located within LSMC are: Patan Hospital, Mental hospital, Kustarog hospital, Alka Hospital, Nidan Hospital, Sumeru Hospital, Midat Hospital, Star Hospital, Vayodha Hospital, Subhatara Hospital, B&B Hospital, Global Hospital, Homeopathic Hospital, Hospital and Rehabilitation Centre for Disabled Children, KIST Medical College and Teaching Hospital, Mental Hospital, HArisiddhi Cancer Hospital, and National Cancer Hospital, .

Patan Hospital and B&B Hospital have their own incineration to manage their hazardous medical waste. Other than that, there are no provisions for the management of special waste such as medical waste, industrial effluents, dead animals etc. In some cases, such hazardous waste were found mixed with the household waste and being collected together by the municipality and taken to the Balkumari transfer station and finally to the Okharpauwa landfill site. More detailed study of Hospital waste is required for deriving more authentic data.

### **3.8 Existing solid waste management organisation including private sector participation**

The existing solid waste management organisation including private sector participation is described in 0. A brief overview of the organisation is given herewith.

A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers has been established and usually convenes on a monthly basis. At the operational level, the Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects.

Communication with key stakeholders such as private sector organizations, women group, TLOs, NagarikSamaj (citizen forum) and NGOs is the responsibility of the Environment Section, which organizes quarterly stakeholder meeting. The Environment Section head of LSMC is responsible for reporting to the municipal board. Waste collection and transportation through the municipality is recorded by the Environment Section under LSMC.

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<sup>13</sup> Banchare Danda Long Term Landfill site design is recently completed by SWMTSC in July 2015.

The total number of municipal employees in SWM is 213, including 4 administrative officers, 5 supervisors, 15 drivers, 40 loaders, 9 mechanics, and 133 sweepers.

There are 14 private operators active in waste collection in LSMC. The private operators all have an NGO background, but all are effectively dual registered now, with one company for business activities and one company for NGO activities. None of the private operators have formal written agreements with the municipality.

Further to the private operators, an estimated 115 scrap dealers (Kawadis) are active in Lalitpur. There are around 500 TLOs in LSMC. They are active in community mobilization including in relation to solid waste management. The Prism Project (Practical Action) has in close cooperation with Kathmandu Valley municipalities identified 8,000 informal waste workers in the valley, but assess that the total likely is to be 15,000. Many are migrants and about half are from India. Many are seasonal workers supplementing agricultural income. The informal sector includes waste pickers (street), waste segregators (in scrap centres), door-to-door collectors (with tricycle), dry waste buyers (feria with cycle) and small scrap owners (dealers).

The Investment Board of Nepal, on behalf of the PM office, 5 ministries and the SWMTSC has initiated a process of PPP in SWM and energy generation in KTM Valley. The tender is structured in three geographical packages, of which Package 2 covers Lalitpur and Kirtipur. The tender process was initiated in 2009 and in 2014 the GoN decided to award the project and proceed with negotiations.

The major components of each package are collection, transport and processing of all municipal solid waste as well as street cleaning and river bank clean-up. The operation on the ground will start at earliest 3 years from end 2015.

But it is not clear at this moment how the relationship between the PPP project and the existing Private Sector SWM service providers will be developed and what will be the role of these private sector service providers.

### **3.9 Information dissemination and awareness raising activities**

The LSMC Social Welfare Division conducts regular training programs for women's groups within solid waste management as well as within conflict management and vocational training. The municipality also cooperates closely with the PRISM project which conducts training and awareness activities for the informal waste workers. The city has however not engaged directly with private employees in the waste sector. Furthermore, information and awareness activities are carried out by the two private service providers NEPCMAC and WEPCO who provide training on household level composting in their collection areas without support from the City or contractual requirements.

The planned and ongoing activities regarding public awareness and community mobilization by the municipality and private entities include:

- Awareness raising and cleanup campaign program
- Plastic collection and composting activities
- Training on household composting, vermin-composting and paper recycling
- Waste segregation campaign.
- Cleanup campaign
- Women empowerment and awareness programs
- Establishment of eco-clubs in schools
- Prevention of incineration
- Prevention of Disposal on street and open air

### 3.10 Tariffs

Waste collection services from households and businesses are not charged in the core area (11 wards) serviced by the municipal operator. However, beginning from Fiscal Year 2015-16, the municipality has decided to charge at least NPR 182 per household per year together with Integrated Property Tax (IPT). It shall be noted that the actual collection of IPT is limited to 15% out of the total households. LSMC has to put a significant effort to improve the IPT collection rate and consequently to improve the SWM tariff to effectively utilize the subsidy scheme of SWM SIP OBA Project as agreed in the Tripartite Agreement (Attachment 8)

The private operators providing waste management services collect from NPR 75 to 300 per household per month from the areas (19 wards) serviced by them. The tariff of the private service providers is unregulated and no reporting on revenue collection by the municipality from these areas takes place.

The average Willingness to Pay for solid waste management services is Rs 103.23 per month with significant standard deviation of 104.3 as per the survey by SIP Survey 2015. People are willing to pay for solid waste management services but there is dis-satisfaction of gap in services (OBA - SWM, SIP survey, 2015). The disaggregated willingness to pay is assessed as follows in Table 5.

**Table 5: Willingness to pay by tariff rate slab and number of Households**

SN	Category (NPR)	HH	%
1	<50	73	23.0%
2	50-100	91	28.6%
3	100-200	80	25.2%
4	200-300	62	19.5%
5	300-500	12	3.8%
	<b>Total</b>	<b>318</b>	<b>100.0%</b>

Source: SIP Survey July 2015

The service charges for collection of solid waste from households and commercial entities have been defined by the municipality through its 21<sup>st</sup> Municipal Council as follows;

**Table 6: SWM revenue slab of LSMC**

SN	Category of houses	Annual SWM charge
1	House with area of up to 2000 sq. ft.	NPR 182
2	House with area from 2001 sq. ft. to 4000 sq. ft.	NPR 360
3	House with area from 4001 sq. ft. to 6000 sq. ft.	NPR 720
4	House with area above 6000 sq. ft.	NPR 1,500
5	Colony/Apartment	NPR 15,000

Source: LSMC, Annual Plan 2072/73 BS

Upon request, if the residents ask for collection of municipal waste, the municipality provides services with charges as;

- A: Tipper                      NPR 1,500 Per Trip  
 B: Tractors                    NPR 500 Per Trip

**Table 7: Revenue Scale for Commercial entities**

SN	Category of commercial entities	Annual SWM charge
1	Retailers and Tea/coffee shops	NPR 500
2	Wholesalers, Medical shops and Restaurants	NPR 1000
3	Small Departmental Store, Mart and Schools/Colleges	NPR 2000
4	Large Departmental Stores (e.g. Bhatbhateni, Namaste, etc)	NPR 3,000 Per Trip
5	Hospitals and Nursing homes	NPR 5,000 Per Trip

This is expected to raise the revenue generation from SWM services by the municipality. Wider campaigns to encourage the locals to pay tax would be needed to achieve the targets stipulated for OBA package of the municipality. Apart from the Municipal fee, the fees raised by the Private Sector service providers shall be declared as “polluters pay” fee and charged based on the nature of waste disposed off from the households and delivered to the waste collectors.

The municipality is further planning on regulation of maximum tariffs for private operators in non-core areas. It is recommended that the services should be charged based on volume or size of households, and the private service providers should abide with requirement for street sweeping in collection area, and it is also recommended that there should be 50% reduction in tariff for households in case of household waste segregation and home composting. LSMC is also recommended for receiving 20% of income generated by private service providers from solid waste services.

In general, the LSMC would like to include the private sector in a more formalized system and a first step has been enforcement and monitoring of the requirement for private operators to transport waste to landfill which has been successful in overcoming earlier challenges with dumping of collected waste at riverbanks.

### 3.11 Financing envelope for SWM in the municipality

At present no waste management tariffs are collected by the municipality apart from 20 Lakh per year payments by institutions, supermarkets and hospitals under individual SWM service contracts. The tariffs collected by the private operators are not reported to the city, but Table 8 below provides an overview of the tariff collection of the three largest private operators.

**Table 8: Tariff collection and recycling revenues of largest operators in LSMC**

Operator	Tariff revenues (NPR/year)	Recycling revenues (NPR/year)	Total revenues from SWM (NPR/year)	Cost recovery (excluding recycling)	Cost recovery (including recycling)
LSMC	2,000,000	-	2,000,000	2%	2%
NEPCEMAC	20,880,000	1,200,000	22,080,000	102%	107%
Sirjansil	5,600,000	1,800,000	7,400,000	77%	101%
WEPCO	2,400,000	300,000	2,700,000	103%	115%
Total	30,880,000	3,300,000	34,180,000	26%	29%

Note: Based on interviews with operators.

The budgeted cost to Lalitpur of SWM service provision is 95 million NPR in 2014/15 (compared to an actual 93 million NPR in 2013/14 and 90 million in 2012/13). This is 16% of the total municipal budget (compared to 20% in 2013/14 and 26% in 2012/13).

The total cost of service provision by the private operators is not reported to the city, but

Table 9 below provides an overview of the cost structure of the three largest private operators.

**Table 9: Cost structure of largest operators in LSMC**

Operator	Salary and benefits (NPR/year)	Material and supplies (NPR/year)	Fuel and lubricants (NPR/year)	Total cost of SWM (NPR/year)
LSMC	67,100,000	5,000,000	16,000,000	88,100,000
NEPCEMAC	17,680,000	1,800,000	1,080,000	20,560,000
Sirjansil	5,600,000	900,000	800,000	7,300,000
WEPCO	1,560,000	300,000	480,000	2,340,000
Total	91,940,000	8,000,000	18,360,000	118,300,000

### 3.12 Municipality policies and bylaws

Brief overview of National policy and legal framework is provided in 0. The SWM Act 2011 has put significant emphasis on following aspects:

- Segregation of Waste at Source
- Waste Producer responsibility
- Responsibility of Local Government
- Responsibility for Waste collection schedule
- Responsibility for establishing waste collection centres in the neighborhood
- Environmental protection
- Collection of Fees for waste management services and Polluters Pay system.

There are no bylaws or guidelines established for solid waste management in LSMC.

### **3.13 Identified major problems within existing solid waste management system**

The following major challenges within existing SWM system in LSMC have been identified.

Collection and transportation service:

- Collection services are provided in all current 30 wards by the LSMC (11 wards) and by private service providers (19 wards)
- Waste Segregation at Source is practiced by 70% of the households but the collection of segregated waste is practiced partially only, which has made 3R practice ineffective. There is a need for radical reform in waste collection practice. Particularly, there is a need for introducing segregated waste collection by designated days which will improve the quality of waste collected and increase the sales values
- There is a need to introduce composting at all levels Household and municipal level or PS Service Provider Level
- There are, however, no written agreements between LSMC and the private service providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC
- The recent municipal reform has increased LSMC by 3 new VDCs which will need SWM service provision for total of 30 wards (8 new wards)
- Medical waste is not separated in collection from smaller clinics.
- Recycling and composting:
  - The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill
  - A pilot project in ward 22 and Ward Nr 13 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households
  - An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughter house waste
  - There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling.

Treatment and disposal:

- All waste for disposal is transported to the Okharpauwa landfill (43 km from the city center) which is operated jointly by Kathmandu and Lalitpur (Lalitpur is not actively involved but contribute one loader and one sprayer including operators and drivers in addition to 20% of the cost of landfill operation)
- There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility
- The enforcement of 3R practice in a systematic manner will reduce the need for waste disposal at the landfill site and reduce financial burden to the municipality
- Since residuals are stored overnight in the transfer vehicles or at the sorting facility, there is room for improvement on the design and operation of the LSMC segregation and transfer facility. A small scale MRF should be designed, and its feasibility should be studied in terms of location and capacity. If required, a near-by site should be identified and used for MRF.

- The existing landfill has only limited remaining capacity and the long term landfill at Banchare Dnada is in the study phase. Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

#### Recycling Destination

- A bulk of waste at community level is collected and transferred to the recycling industries by the Kawadis. These Kawadis also need to be regulated and the final destination of recycling practice shall be identified.
- The activities of the Kawadis need to be monitored in order to prevent the disposal of certain waste in open nature and street.

#### Institutional set up for SWM:

- A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers, usually convenes on a monthly basis
- The Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects
- There is no contractual framework between LSMC and the private service providers concerning their involvement in SWM
- LSMC has introduced tariff charge to households and businesses commencing from Fiscal Year 2015-16 through Integrated Property and Service Charge System. However, the new tariff is considered as double charge in the areas outside the core areas where the waste generators with private service provision have to pay for the service they get
- The tariff of the private service providers is unregulated and no reporting on revenue collection takes place
- Formal Registration of private sectors involved in solid waste management service providing activities, contractual agreement with LSMC needs to be taken as an initial stage to structure PPP in SWM of LSMC.
- Several Consultative Meetings were conducted by SWMTSC/OBA SIP team and the Consultant with LSMC and Private Sector to discuss on way forward. Private sector representatives and SIP team also agreed on the need of PPP approach to align with 3R and Zero Waste Concept (Attachment 2, *Consultative Meeting Notes*).

#### Information and awareness activities:

The Social Welfare Division conducts training programs for women's groups including in relation to SWM

- Private sector service providers such as NEPCEMAC, and WEPCO are encouraging and giving training to people for household level composting, recycling and rooftop gardening.

#### Financing of the SWM system:

- The cost of service provision of LSMC (excluding depreciation on assets) has increased from 90.6 Lakh in 2012/13 to a budgeted 95.0 Lakh in 2014/15 (COWI, 2015) and 97.07 Lakhs in 2015/16 (Multi 2016)
- The waste management fee collected by the three largest private operators in their service areas is in the order of NPR 350 Lakhs per year. The LSMC does not collect a sanitation fee from households in their service areas, but NPR 20 Lakh is collected from institutions, supermarkets and hospitals for SWM services
- Revenues from recycling by the three largest private service providers are in the order of 30 Lakh per year. Furthermore, significant revenues from recovered materials accrue to the informal sector and scrap dealers, but the level is unknown
- Cost recovery for the LSMC SWM services is in the order of 2% (2013/14) prior to introduction of a sanitation fee for households. The largest private operators have full cost recovery when taking recycling revenues into account.
- Revenue from Polluters Pay principles shall be explored and applied if found feasible.

## **4. Solid Waste Management Service Improvement Plan (SWP-SIP)**

### **4.1 Solid Waste Management Strategic Plan**

The Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City (January 2014) identifies the following long term Strategic Objectives in relation to waste management in Lalitpur:

- To establish Municipal Solid Waste Management Information System
- To improve collection and transportation system of source segregated sources
- To promote 3R approach for waste minimization
- To improve waste treatment and final disposal system
- To promote public participation and behavior change of different stakeholders in SWM
- To enhance organizational, institutional and legal arrangements for effective SWM service
- To develop financially sustainable SWM system
- To facilitate special and hazardous waste management

Furthermore, the plan establishes ambitious targets for recovery of organic and recyclable fraction and waste for landfill over the planning period:

- Recovery of organic waste to increase from zero in 2014 to 40% in 2018 and 90% in 2028
- Recovery of recyclable fraction to increase from 10% in 2014 to 40% in 2018 and 100% in 2028
- Waste for landfill to decrease from 95% in 2014 to 62.5% in 2018 and 12% in 2028

The long term strategic objectives are well in line with the National SWM policy.

The SWM Strategic Plan and Action Plan is in line with the template developed in the OBA project in 2012.

Outside the Strategic Plan, two separate developments application of Zero Waste Approach and Polluters Pay principle may significantly change the basis for SWM planning in Lalitpur:

- The government has announced a municipal reform which includes 3 VDCs making 8 new wards (38,000 inhabitants) and a total of 30 wards in LSMC, with accompanying SWM service obligations (8 new wards from 3 VDCs will require SWM services).
- The Investment Board of Nepal on behalf of GoN is conducting a tender for a PPP on SWM and energy generation in KTM Valley (three geographically defined packages that include collection, transport and processing of all municipal solid waste as well as street cleaning and river bank clean-up as well as recovery, recycling and energy generation, with all technical options being left open to the bidders). Preferred bidders have been identified and negotiations have started, but in light of the complexity of the tender and contracts, it is assessed that the PPP contractors are unlikely to be in operation during the four year SWM-SIP period. Nevertheless, the PPP project shall be taken into consideration and the SWM-SIP designed for sustainable development irrespective of whether the PPP project is implemented or not.
- Encouragement for Segregation of Waste, collection of segregated waste, emphasis on composting and recycling at source.
- Application of Polluters Pay principles for disposal of waste in open space, street or nature and incineration in open air.

### **4.2 SWM-SIP**

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 Lalitpur Sub-metropolitan City. The objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP are:

- Collection services are provided for all households, institutions and commercials in all wards including the three additional VDC (8 new wards)
- Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas
- Municipality council redifne the tariffs in two slabs: 1) Min. charge of NPR 182 per household/year and 2)Polluters Pay tariff based on the quality and quantity of waste disposed off from the house and delivered to the waste collectors.
- Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share
- Street sweeping in core area and at main streets and public areas in other areas
- Improved operations practices at transfer and recovery sites
- Recovery of organic waste to reach 40% in 2018
- Recovery of recyclable fraction to reach 40% in 2018
- Recommend way forward for PPP Guidleine for SWM, and to suggest on PPP model
- Plan for healthcare waste management prepared

The objectives and targets of Outside the SWM SIP OBA project that may influence the SWM Approach in Lalitpur are described as follows:

- Encouraging the Source Segregated waste collection from Households
- Collection of Segregated Waste by designated days
- Encouraging household composting and recycling
- Prevention of open air incineration
- Prevention of disposal in open air, street and nature
- The above approach need no additional investment but adjustment in the action plan and providing training to the waste collectors, and monitoring by independent PS/NGO

#### **4.2.1 Necessary investments and TA activities**

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

- Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1st year- 40 Lakh each
- Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1st year - NPR 13 Lakh each
- Replacement of four existingworn out secondary collection vehicles (two large tipper trucks at the existing temporary transfer station in year 1 and two large tipper trucks at the new transfer station in year 2) - NPR 40 Lakh each
- Improvements in temporary transfer station including removal of old worn out vehicles and estblishment of simple material recovey facility (MRF) in year 1– NPR 50 Lakh (SWMTS will also support)
- Front end loader at the temporary transfer station in year 1 - NPR 45 Lakh
- New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh
- Front end loader at the new transfer station in year 2 - NPR 45 Lakh
- Loader for landfill in year 1- NPR 80 Lakh
- Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh
- TA for SWM PPP Guideline

#### **TA Activities**

- Development of PPP Guideline in SWM for LSMC, and Institutional Strengthening and Capacity Building for PPP Unit
- Strengthening of MIS along with GIS application
- Carrying out waste generation, collection, composting, recycling and delivery of residual waste atland fill site
- Developing waste monitoring system at Transfer station and Lanfill site

- Preparation of Guidelines for Source Segregated waste collection, Composting and Recycling at Households or source of waste generation

Surveys and feasibility studies:

- Carry out a survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station Detailed study of Waste Management being carried out by the municipality and the Private Sector.
- Preparation of Data Base of SWM Services provided to the Households and collection of revenue.
- Preparation of Guidelines for Source Segregated waste collection, Composting and Recycling at Households or source of waste generation
- Preparation for Outsourcing of the Waste Management Services in the core area to the Private Sector through competitive bidding and charge monthly fees in the same manner as in other non-core areas.

More detailed description is provided in Attachment 3: Additional Surveys and Feasibility Studies

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

- Establishing operational manual for segregation and transfer facility operations and management including MRF
- Introduction 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
- Design and implementation of IEC campaigns
- Assistance in development and implementation of information and awareness campaigns for clean city, source segregation of waste, prevention of disposal in open space, street, and nature, and prevention of incineration in open air.
- Introduction of simple contractual arrangements for private operators in waste collection, segregation, treatment, and final disposal
- Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.

Some of the recommendations under PPP framework are;

- Development of PPP Guideline for SWM in LSMC considering environmental factors
- Establishment of PPP Unit in LSMC
- Institutional strengthening and capacity building for PPP unit
- Duplication of service charge by private sector and LSMC revenue to be sorted out
- LSMC's strategy should be reducing its yearly budget gradually and start generating revenue (within 3-5 years), and providing some subsidy to households and private sector that promote and practice PPP, practicing composting and 3R
- Service Contract could be the best option for institutionalizing the involvement of PPP for SWM in LSMC as per LSGA, Public Procurement Act 2063 (2007) and Public Procurement Regulations 2064 (2007) and LBFAR 2064 (Section 157).

### **3.2.2 Planned financing of the SWM-SIP implementation**

The costs of implementing the SWM-SIP will be paid for by a combination of:

- Government budget commitment
- Collected SWM tariffs
- Collected savings from Compost and Recycled material sales
- Collected Tariffs from Polluters Pay principles
- Service Delivery Subsidy under the OBA project

Lalitpur Sub-metropolitan City is committed to gradually introduce and enforce a SWM tariff to ensure an increase in the cost recovery from the present 2% to 17% over the four year implementation period of the SWM-SIP. This is a fundamental requirement to ensure sustainability of the SWM system after the implementation of the SWM-SIP

#### 4.2.3 Monitoring and evaluation of the SWM-SIP implementation

The implementation of the SWM-SIP will be monitored and evaluated by the Solid Waste Management Committee assisted by the Environment and Sanitation Section for which effective use of MIS is recommended.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.

### 5. General Cost Model of Solid Waste Management Service Improvement Plan (SWP-SIP)

The general cost model excel sheet for LSMC is provided in Attachment 9. The model covers all 30 wards. The Cost model has made consideration for following aspects:

- Encouragement for Source Segregation waste at household or source of generation
- Providing incentives to the waste generators for producing quality segregated waste and reduction source composting and recycling
- The SWM tariff established by the Municipality Council is considered as the basic min tariff applicable to all households and waste producers
- The tariff collected by the Private Sector Service Providers is considered as tariff following polluters Pay principles and will be slided based on the quantity and quality of waste producers

The challenges of the general cost model are as follows:

- The municipality collects the SWM service tariff as a part of the Integrated Property tax and is paid by about 15% of households only and is paid when the households need municipality support to accomplish other business or recommendations from the municipality.
- It is essential to debundle the SWM tariff from Property tax system
- Bringing all households to the computerised property tax system to allow collection of SWM tariff on regular annual basis. This will require preparation of household data base through specific survey and updating the computer data base.
- Outsourcing the tariff collection through the PS SWM service providers
- Outsourcing the swm service provision in the core area
- Municipality focuses on monitoring of PS performance and on the grievances of the consumers.
- Impose penalty on the PS service providers for default of quality of services

### 6. Environmental Screening

Screening of social and environmental aspects of intended OBA interventions was carried out in accordance to the ESMF guidelines and the Operations Manual. The screening was based on literature review, field study and interactions with the Municipality Staff. The basic screening is summarized as;

Concerns	Observation	OBA Eligibility/Remarks
Land Acquisition	Not required	Eligible
EIA study	Not required	Eligible
Social Issues	Potential	ESMP required
Environmental issues	Potential	ESMP required

The detailed screening has been conducted jointly by the Municipality and the SIP Consultants during March - April 2015, and based on the Environmental and Social Management Framework (ESMF) for OBA for Municipal Solid Waste Management in Nepal.

The detailed Social and Environmental Screening is presented in Attachment 4.

## **7. Environmental and Social Mitigation Plan**

The Environmental and Social Management Plan of SIP Activities in Lalitpur Sub-Metropolitan City has been conducted jointly by the Municipality and the SIP Consultants based on the Environmental and Social Management Framework (ESMF) for OBA for Municipal Solid Waste Management in Nepal.

The document has focused on mitigations for major concerns including vehicular traffic, vehicular pollution, occupation health impacts and pollution concerns with respect to increased service coverage and proposed improvement in transfer station with MRF facility. The implementation schedule, and roles and responsibilities have been presented in Attachment 5.

Monitoring Format has been prepared for follow-up of the activities recommended to mitigate the negative impacts that may arise due to SIP support activities under this OBA project.

The detailed Environmental and Social Mitigation Plan is presented in Attachment 5.

## **8. Household Survey**

Stratified Random Sampling was carried out in the LSMC to get data on waste management status, waste services and behavioural aspects of solid waste management in the LSMC. The household survey was conducted in all 30 wards of LSMC. The total number of sample taken was 354 households. The survey was completed in August 2015.

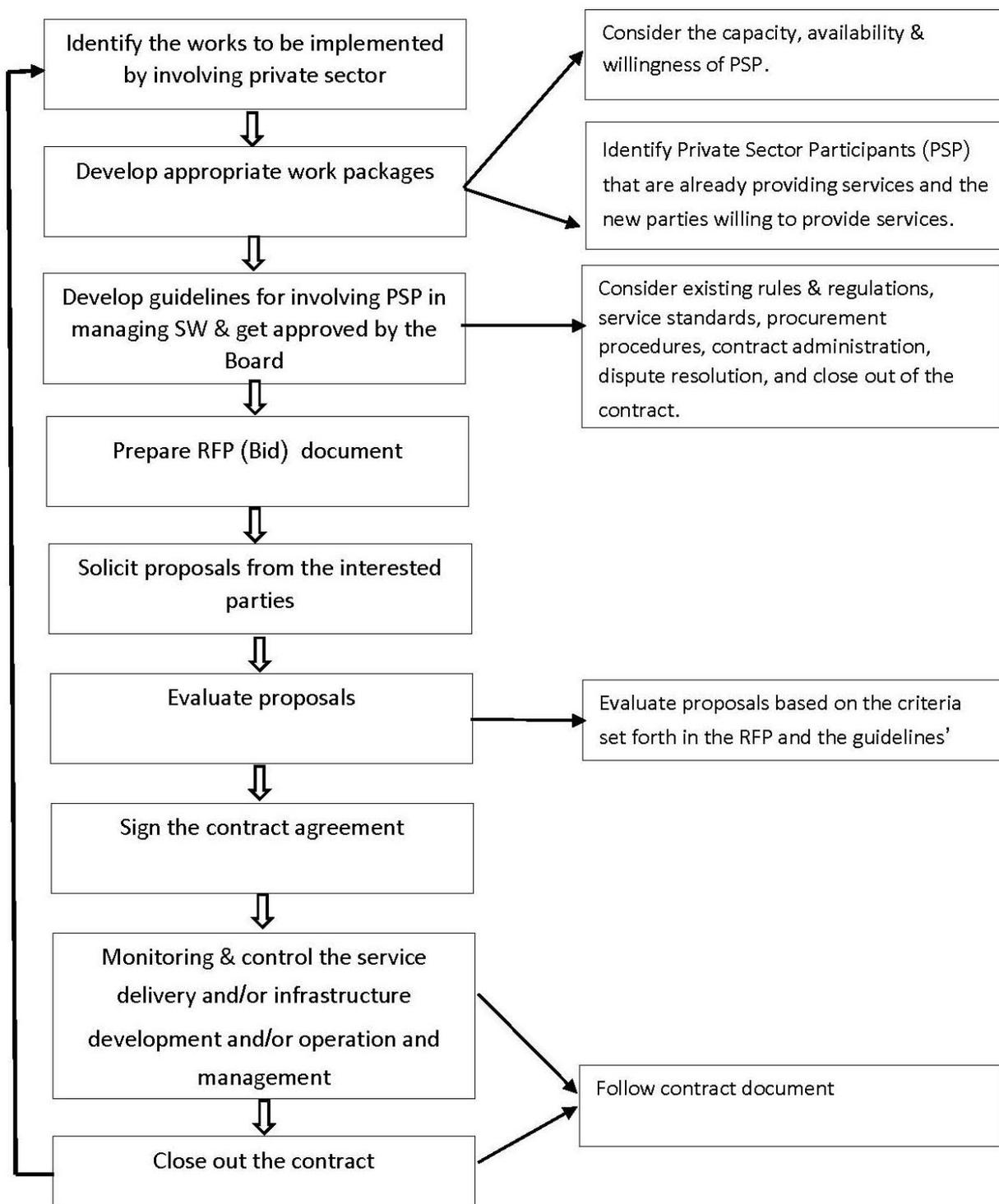
Daily waste generation in households, waste management practices in households, practices of waste disposal, types of waste handling, use of private service provisions for waste management, payments for existing private waste collection services, willingness to pay for improved solid waste management services, waste segregation practices, and opinion on waste management service improvement were surveyed using trained surveyors.

It was reflected that around 30% of population received door-to-door services, and 36% of the population still dispose the waste in open spaces. Around 19% practise composting in household level, and only around 14% have taken participation in awareness raising campaigns. Another interesting finding was that around 40% of the households earn NRs 25 to 100 monthly by selling waste materials to the waste collectors. The households are paying NRs 100 to 350 per month for solid waste management services by the private operators, and the willingness to pay show that in average the households are willing to pay NRs 154 per month for the solid waste management services.

The survey also shows that around 47% of the households received solid waste collection services from the Municipality, and the suggestions were concentrated on regular waste collection, conducting of more awareness raising activities and provision of additional cleaning facilities of solid waste management by LSMC.

The details on House Hold survey is presented in Attachment 6 Household Survey

**Figure 3: Private Sector Involvement Process**



# ***Appendices***

# **Appendix-A**

***Executive Summary SWP-SIP***

## **Appendix-A: Executive Summary SWP-SIP**

### ***Existing situation on solid waste management***

The following major challenges within existing SWM system in LSMC have been identified. The SWM Act 2011 has put a significant weightage on source segregated waste management practice, prevention of burning the waste and disposal in open space and nature<sup>14</sup>, and allowing disposal of residual waste to Landfill site.

#### **Source Segregation System:**

The existing waste management at household level is characterised by the source segregation currently practiced by over 70% in 30 wards (Attachment 5). Particularly, the pilot wards practicing Source Segregation were ward Nr 22 and ward Nr 13. Several small PS/NGOs are engaged in the awareness building and providing education to the households at ward level and selected Toles. The challenges in Source Segregation are:

- Orientation to the households for Source Segregation, storage and delivery of segregated waste to the Municipality Collectors or Private Sector Collectors by designated days
- Assessment of waste generated in the households through actual daily generation weighing
- Providing incentives to the households for source segregation, conducting daily measurement and following Source Segregation Manual and Directives

#### **Prevention of disposal and incineration in open air**

- Orientation to the waste producers on prevention of disposal and incineration of waste in open air, street and nature
- Introduction of Polluters Pay principles

#### **Collection and transportation service:**

- Collection services are provided in all current 22 wards by the LSMC (11 wards) and by local CBOs and private service providers (19 wards),
- Gradually, outsourcing the waste collection services from core areas to the Private sector. This is allow the municipality to focus on monitoring activities and deriving innovative activities
- Introduction of reporting framework about operators working in LSMC Introduction of framework for reporting on grievances of the consumers on the quality of services provided by the private operators.
- Impose penalty on PS service providers for default on quality of services provided by the PS
- There are, however, no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC
- Similarly, there is no framework for reporting on grievances of the consumers on the quality of services provided by the private operators.
- Remixing of segregated waste by municipality collectors No written regulation of waste collection by municipality and PS Collectors
- Institutions, supermarkets and hospitals have individual written agreements with LSMC for waste collection
- The recent municipal reform has increased LSMC by 8 new wards (3 new VDCs) which will need SWM service provision
- Medical waste is not separated in collection from smaller clinics.
- There has emerged a need to introduce a new approach of waste collection. Particularly, the need is based on the concept to collect the segregated waste in two ways: 1) Biodegradable waste to be collected every day using green color vehicles and other segregated waste by designated days.

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<sup>14</sup> Badan Lal Nyachhyon, Zero waste – New Culture for New Century, Waste Concern 2006

### **Recycling and composting:**

- The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill
- A pilot project in ward 22 and ward nr 13 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households
- 3,700 Compost bins have been distributed to households at subsidized rates (500 NPR versus full cost of 2,500 NPR)
- An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste
- There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling.
- LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.

### **Treatment and disposal:**

- All waste for disposal is transported to the Okharpauwa landfill (43 km from the city center) which is operated jointly by Kathmandu and Lalitpur
- There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility
- The existing landfill has only limited remaining capacity and the long term landfill situation is unclear
- Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

### **Institutional set up for SWM:**

- A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers, usually convenes on a monthly basis
- The Environment and Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects
- There is no contractual framework between LSMC and the private service providers concerning their involvement in SWM
- The city does not charge households and businesses in the core areas serviced by the City, while waste generators in areas with private service provision have to pay for the service
- The tariff of the private service providers is unregulated and no reporting on revenue collection and service performance takes place

### **Information and awareness activities:**

- The Social Welfare Division conducts training programs for women's groups including in relation to SWM
- Private sector service providers such as NEPCEMAC, and WEPCO are encouraging and giving training to people for household level composting, recycling and rooftop gardening

### **Financing of the SWM system:**

- The cost of service provision by LSMC (excluding depreciation on assets) has increased from 90.6 Lakh in 20012/13 to a budgeted 95.0 Lakh in 2014/15 (COWI, 2015)
- The cost of service provision by the 14 private operators is not known but the three largest reported total costs in the order of 300 Lakh
- LSMC collects 20 Lakh SWM fee from institutions, supermarkets and hospitals but does not presently collect a sanitation fee from households and small businesses in their service areas
- The total sanitation fee collected by the 14 private operators in their service areas is not known, but the three largest reported 289 Lakh in tariff revenues
- The recycling revenues of LSMC are minimal
- The level of revenues from recycling by the 14 private service providers and the informal sector is unknown, but the three largest reported 33 Lakh in recycling revenues

- Cost recovery of the municipal SWM system is zero (2013/14) prior to introduction of a sanitation fee in the LSMC service areas. In contrast cost recovery by the three largest private operators is 93% excluding recycling revenues and 104% including recycling revenues.

### **Solid Waste Management Service Improvement Plan (SWM-SIP)**

In line with the National SWM policy, the 2014 Solid Waste Management (SWM) Strategic Plan and Action Plan for Lalitpur Sub-metropolitan City<sup>15</sup> (the Strategic Plan) identified the following long term Strategic Objectives in relation to waste management:

- To establish Municipal Solid Waste Management Information System (MSWMIS)
- To improve collection and transportation system of source segregated sources
- To promote 3R approach for waste minimization
- To improve waste treatment and final disposal system
- To promote public participation and behavior change of different stakeholders in SWM
- To enhance organizational, institutional and legal arrangements for effective SWM service
- To develop financially sustainable SWM system
- To facilitate special and hazardous waste management

The following targets are proposed in the strategic plan for recovery of organic and recyclable fraction and waste for landfill over the planning period:

- Recovery of organic waste: Increase from 2% in 2014 to 40% in 2018 and 90% in 2028 at the end of the planning period
- Recovery of recyclable fraction: Increase from 10% in 2014 to 40% in 2018 and 100% in 2028 at the end of the planning period
- Waste for landfill: Decrease from 95% in 2014 to 62% in 2018 and 12% in 2028 at the end of the planning period

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 Lalitpur Sub-metropolitan City. The objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP are:

- Collection services are provided for all households, institutions and commercials in all wards including the three additional VDCs (8 new wards)
- Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas
- Municipality council redifne the tariffs in two slabs: 1) Min. charge of NPR 182 per household/year and 2)Polluters Pay tariff based on the quality and quantity of waste disposed off from the house and delivered to the waste collectors.
- Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share
- Street sweeping in core area and at main streets and public areas in other areas
- Improved operations practices at transfer and recovery sites
- Recovery of organic waste to reach 40% in 2018
- Recovery of recyclable fraction to reach 40% in 2018
- Plan for healthcare waste management prepared

The objectives and targets of Outside the SWM SIP OBA project that may influence the SWM Approach in Lalitpur are described as follows:

- Encouraging the Source Segregated waste collection from Households
- Collection of Segregated Waste by designated days
- Encouraging household composting and recycling
- Prevention of open air incineration

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<sup>15</sup>Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, Ministry of Urban Development, Solid Waste Management Technical Support Center (SWMTSC), Final Report January 2014 (submitted by Engineering Study & Research Centre (P) Ltd, Ministry of Urban Development for Lalitpur Sub-metropolitan City.

- Prevention of disposal in open air, street and nature
- The above approach need no additional investment but adjustment in the action plan and providing training to the waste collectors, and monitoring by independent PS/NGO

### **Necessary investments and TA activities**

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

- Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1st year - 40 Lakh each
- Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1st year - NPR 13 Lakh each
- Replacement of four existing worn out secondary collection vehicles, two large tipper trucks at the existing temporary transfer station in year 1 and two large tipper trucks at the new transfer station in year 2) - NPR 40 Lakh each
- Improvements in temporary transfer station including removal of old worn out vehiclea and estblishment of simple material recovey facility (MRF) in year 1- NPR 50 Lakh (SWMTS will also support)
- Front end loader at the temporary transfer station in year 1 - NPR 45 Lakh
- New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh
- Front end loader at the new transfer station in year 2 - NPR 45 Lakh
- Loader for landfill in year 1- NPR 80 Lakh
- Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh
- TA for SWM PPP Guideline

#### TA Activities

- Development of PPP Guideline in SWM for LSMC including establishment of a PPP unit in the municipality
- Strengthening of MIS along with GIS application
- Carrying out waste generation, collection, composting, recycling and delivery of residual waste at land fill site
- Developing waste monitoring system at Transfer station and Lanfill site
- Preparation of Guidelines for Source Segregated waste collection, Composting and Recycling at Households or source of waste generation

#### Surveys and feasibility studies:

- Carry out a survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station
- Detailed study of Waste Management being carried out by the municipality and the Private Sector.
- Preparation of Data Base of SWM Services provided to the Households and collection of revenue.
- Preparation of Guidelines for Source Segregated waste collection, Composting and Recycling at Households or source of waste generation
- Preparation for Outsourcing of the Waste Management Services in the core area to the Private Sector through competitive bidding and charge monthly fees in the same manner as in other non-core areas.

The TA activites and other requirements for additional studies, survey and investigation are provided in Attachment 3.

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

- Establishing operational manual for segregation and transfer facility operations and management including MRF
- Introduction 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

- Design and implementation of IEC campaigns
- Assistance in development and implementation of information and awareness campaigns for clean city, source segregation of waste, prevention of disposal in open space, street, and nature, and prevention of incineration in open air.
- Introduction of simple contractual arrangements for private operators in waste collection, segregation, treatment, and final disposal
- Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.

PPP framework;

- Development of PPP Guideline for SWM in LSMC
- PPP Unit is needed in LSMC
- Duplication of service charge by private sector and LSMC revenue to be sorted out including minimum charges for households disposing residual waste after practicing composting and recycling
- LSMC's strategy should be reducing its yearly budget gradually and start generating revenue (within 3-5 years), and providing some subsidy to households and private sector that promote and practice PPP, practicing composting and 3R
- Service Contract could be the best option for institutionalizing the involvement of PPP for SWM in LSMC as per LSGA, Public Procurement Act 2063 (2007) and Public Procurement Regulations 2064 (2007) and LBFAR 2064 (Section 157).

### ***Planned financing of the SWM-SIP implementation***

The costs of implementing the SWM-SIP will be paid for by a combination of:

- Government budget commitment
- Collected SWM tariffs
- Collected savings from Compost and Recycled material sales
- Collected Tariffs from Polluters Pay principles
- Service Delivery Subsidy under the OBA project

Lalitpur Sub-metropolitan City is committed to gradually introduce and enforce a SWM tariff to ensure an increase in the cost recovery from the present 2% to 17% over the four year implementation period of the SWM-SIP. This is a fundamental requirement to ensure sustainability of the SWM system after the implementation of the SWM-SIP. At the same time, it is absolutely required to develop sliding rules for imposing service charges based on the quantity and quality of waste disposed from the households following the "Polluters Pay" and "Producers Responsibility" principles promulgated by SWM Act 2011.

### ***Monitoring and evaluation of the SWM-SIP implementation***

The implementation of the SWM-SIP will be monitored and evaluated by the Solid Waste Management Committee assisted by the Environment and Sanitation Section.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.

The monitoring and evaluation process will include the formalisation of the activities of PS/NGO activities in relation to the SWM services provided by them within the municipality including the informal SWM workers, scrap dealers and individual workers under a licensing system as per SWM Act 2011.

Outsourcing of the Waste Management Services in the core area to the Private Sector through competitive bidding and charge monthly fees in the same manner as in other non-core areas.

The SWM fee approved by the Municipality will be applied as a minimum common to all households in the municipality for the case in which households practice dispose only residual waste remaining after composting and recycling. This concept needs to be discussed and approved in due course of time.

# **Appendix-B**

*Socio-economic background data*

## Appendix-B: Socio-economic background data

The following description is based on the Final Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, January 2014 and LSMC Annual Plan 2072/73.

Geographical conditions (location, accessibility and climate conditions)

Lalitpur Sub-Metropolitan City (LSMC) is located in the south-east of Kathmandu at Central Development Region of Nepal. With its urban history dating back as far as 2000 years, LSMC is one of the three major cities located inside the Kathmandu valley, besides Kathmandu and Bhaktapur.

LSMC was originally established in 1918 and finally upgraded to sub-metropolitan city in 1995. The municipality has a long history with its foundation in the third century. From historic times, the municipality is known with various names: Yala after the kirat King Yalamber; Ashok Pattan after the visit of Emperor Ashok who erected four Ashok Stupas at four corners of the municipality. From the Pattan name, it has carried the famous name “Patan” even in these days. Lalitpur is famous for its abundant fine historical art and culture including the World Heritage Site – Patan Durbar Square. LSMC has its office located at Pulchowk, Lalitpur and is the sole agency for providing municipal services and carrying out urban development works in the city of Lalitpur. After the enactment of LSGA in 1999, municipalities were given more power and authority to plan and implement developmental works regarding urban infrastructures and services within its jurisdiction.

Following the municipal reform in 2014, the municipality jurisdiction is extended by amalgamation of 3 VDC namely Sonakothi, Dhapakhel and Harisiddhi and th increased to 30 wards from 22 wards. The map of the extended municipality is provided in Figure B1. The Figure also provides information on the population in the ward. The population in wards varies from min 2424 to 21232 as per Census 2011.

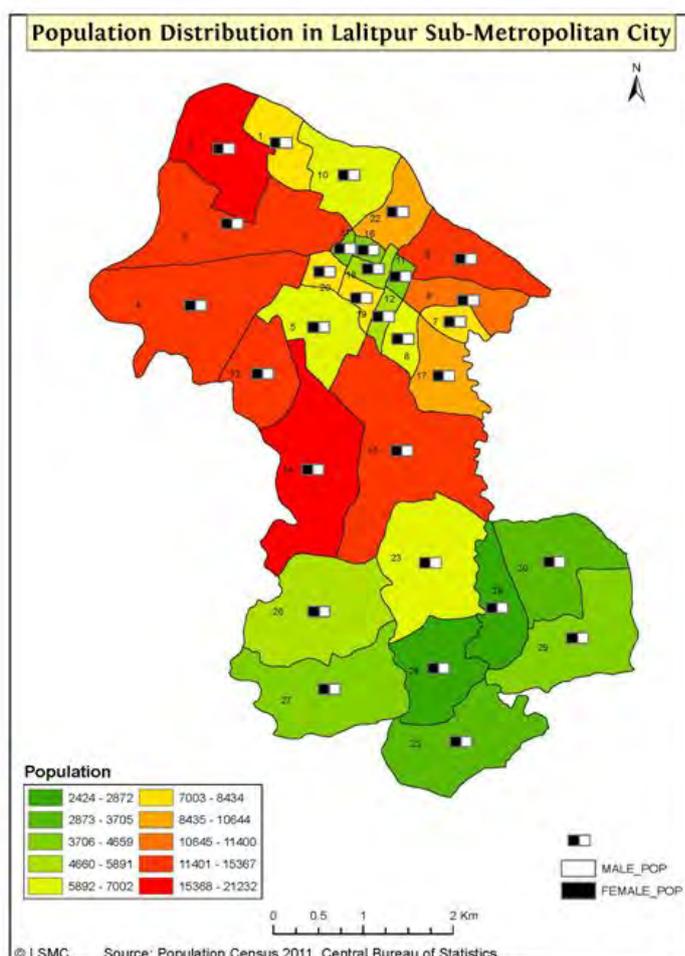


Figure B1 Administrative boundary map of LSMC

The total area of LSMC is 24.98km<sup>2</sup> and it comprises of 30 urban wards. The valley lies at a mean elevation of about 1,350m above sea level. The altitude of the city varies from a minimum of 1,266m to a maximum of 1,366m above sea level, which shows the relative flatness of the ground on which the city is located.

Table B1: Geographical Boundaries

	<u>Geographical Boundaries</u>	<u>Rivers at the Boundaries</u>
East	Imadol (Mahalaxmi Municipality)	Kodku River
West	Karya binayak Municipality, Kirtipur Municipality and Kathmandu Metropolitan City (KMC)	Nakhu Khola, Bagmati River
North	Kathmandu Metropolitan City (KMC), and Imadol of Mahalaxmi Municipality	Bagmati and Manohara Rivers
South	Thecho and Jhauwarashi in Bajrabarahi Municipality and Thaiba in Godawari Municipality	

Source: Municipality Map, 2015

Rivers form the natural territorial boundary of LSMC separating the city from its neighboring cities and VDCs. It is bounded in the north and west by the holy Bagmati River, to the east by Karmanasa or Kodku River and to the west by Nakhu Khola. LSMC lies within the warm temperate climate zone of the Kathmandu valley, with typical monsoonal two-season year. Yearly average temperature in the city is 15-20o Celsius and receives yearly average rainfall of 2,000-2,400mm (DHM 2001). There's the dry season from October to May and there's the wet season, the monsoon, from June to September.

Lalitpur Sub-Metropolitan City has a well-developed road network of various categories, width and pavement types catering to the transportation needs of its citizens. The city has good transportation linkages with other cities and settlement areas at the rural peripheries of the valley, especially at the south and south-east. From 1985 to 1998, the total length of road under various road categories in the Lalitpur District increased from 290 to 383 kilometers<sup>16</sup>

### Area and land use pattern

The city of Lalitpur was one of the three main cities in Kathmandu valley and it consists several other small satellite settlements like Lubhu, Khokana, Bugamati, and there existed close socio-economic and cultural linkages between. The city like other cities in the valley shows distinct urban settlement and land use pattern. The settlements were compact in nature and within them were hierarchies of spaces depending upon the social position held by the people especially during the Malla period. The royal palace or Durbar Square with series of courtyards and big open spaces with temples in it occupied the central position within the city. The immediate area surrounding the palace was allocated for the priests, noblemen and people belonging to the high castes. Next to this were people of the business community, craftsmen, farmers and workers. To the outermost boundary or the periphery of the city were the lower caste groups such as cleaners, podes, butchers etc. Agricultural land extends beyond the city area. This is in consonance with the traditional urban settlement pattern of human history.

Considering rapid urbanization in the city, Kathmandu Valley Urban Development Program has devised a certain land use ordinance to guide the pattern of land use within the city and this is the basic guideline that has been followed for the purpose of preparing a current land use map. The area covered by different land use zones have been presented in Figure B2 and Table B2 below.

<sup>16</sup>Status of SWM in municipalities of Nepal, SWMTSC, 2008

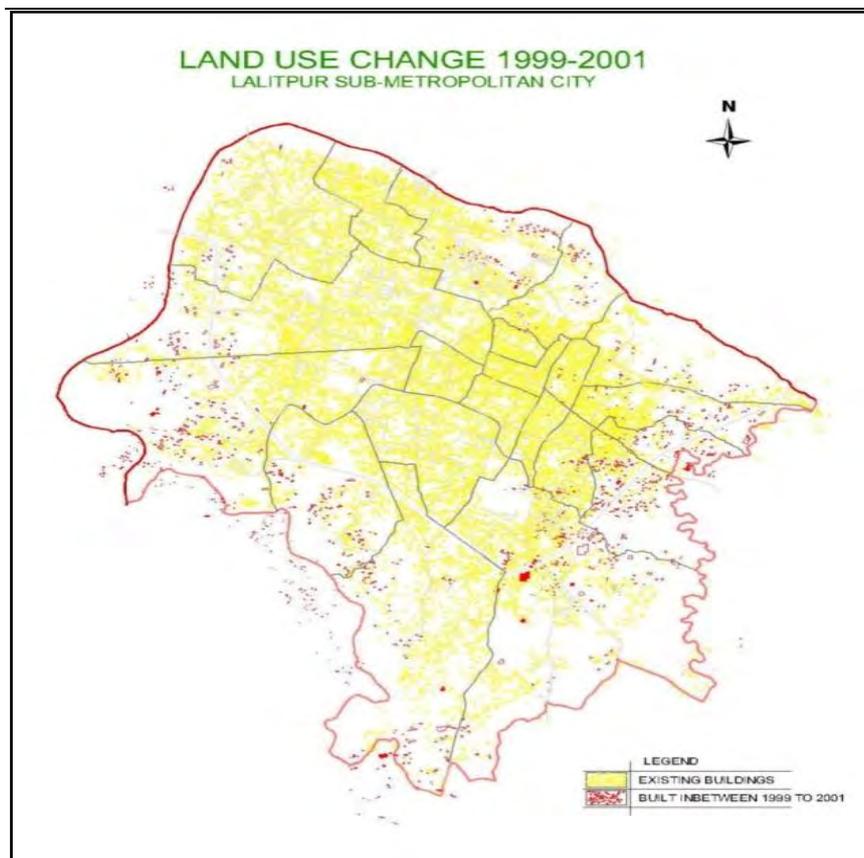


Figure B2 Land use change of LSMC from 1999 - 2001

**Table B2: Land Use Zone of LSMC**

S.N	Zone	Area in m <sup>2</sup> .
1	Core Area/Inner City Area	0.97
2	Residential Area	13.03
3	Institutional Zone	1.08
4	Industrial Zone	0.17
5	Conservation Zone	0.066
6	Surface Transportation Sub-Zone	0.0055
7	Sports Zone	0.096

Source: City Profile, LSMC 2005

### **Population and households**

According to the Census Report of 2011<sup>17</sup>, the total population of the Lalitpur was 226,728 (108,936 female and 117,932 male) and number of households 54,581.

Household, total population and population by sex in ward level of Lalitpur Sub-metropolitan City are presented in Table B3 below. According to the 2001 Census, the total population was only 162,991. Thus the population has increased by 72% within the 10 years period.

**Table B3: Households, total population and population by sex and ward level of Lalitpur Sub-metropolitan City 2011**

Ward No.	Households	Total population	Male	Female
1	2,221	8,660	4,835	3,825
2	4,839	19,573	10,747	8,825
3	3,528	14,460	7,582	6,878

<sup>17</sup> National Population and Housing Census 2011 (National report), Volume 01, Central Bureau of Statistics, November 2012

Ward No.	Households	Total population	Male	Female
4	3,913	15,779	7,857	7,923
5	1,516	6,576	3,267	3,309
6	1,563	6,962	3,601	3,361
7	1,839	8,060	4,224	3,836
8	2,816	11,706	6,175	5,531
9	3,484	14,281	7,654	6,627
10	1,729	6,730	3,636	3,094
11	1,010	4,578	2,319	2,259
12	1,342	6,049	3,176	2,873
13	3,772	15,266	7,670	7,596
14	5,438	21,802	10,902	10,900
15	3,480	14,230	7,254	6,976
16	858	4,479	2,235	2,244
17	2,678	10,930	5,754	5,176
18	1,200	5,932	2,955	2,977
19	1,774	7,583	3,917	3,666
20	1,978	7,928	4,102	3,826
21	1,143	4,784	2,471	2,313
22	2,460	10,380	5,600	4,780
23	1,854	7,002	3,645	3,357
24	571	2,424	1,206	1,218
25	753	3,252	1,584	1,668
26	1,377	5,813	2,834	2,979
27	1,020	4,279	2,128	2,151
28	756	2,872	1,432	1,440
29	1,070	4,159	2,063	2,096
30	911	3,705	1,883	1,822
<b>Total</b>	<b>62,893</b>	<b>254,308</b>	<b>130,556</b>	<b>123,752</b>

Note: The Table is based on Table 2.4 in the Final Report on SWM Strategic Plan and Action Plan for Lalitpur Sub-metropolitan City, January 2014. However the figures have been adjusted taken into account that the total number of population is 220,802 in Table 2.1 in the Strategic Plan, while the number of population is 226,728 in the National Census Report

The government has announced a municipal reform which included 3 VDCs in LSMC, with accompanying SWM service obligations (to 8 new wards from 3 VDCs will require SWM services). The number of households and population in 2011 in the 3 VDCs are presented in Table B4 below

**Table B4: Households, total population and population by sex of 3 VDCs in 2011**

VDC	Households	Total population	Male	Female
Harisiddhi	2,737	10,736	5,378	5,358
Dhapakhel	3,178	12,678	6,435	6,243
Sunakothi	2,397	10,092	4,962	5,130
<b>Total 3 VDCs</b>	<b>8,312</b>	<b>33,506</b>	<b>16,775</b>	<b>16,731</b>

Note: Figures from population census 2011

Institutional, industrial and commercial activities

There are altogether 212 educational institutions in LSMC, including government and private schools, boarding schools, colleges. Among them are 22 pre-primary, 36 primary, 141 secondary level schools and 13 colleges.

Several schools, renowned in the whole Kathmandu valley are located here. To name some few are, AVM, St. Xavier's, St. Mary's, DAV, Rato-Bangala, and Little Angels. The presence of high educational institutions in the city is the testimony to its higher literacy rate of nearly 81%. Also there are number of colleges providing education on number of subjects like commerce, business, management, arts, nursing and engineering among others. Institute of Engineering, one of the pioneering engineering colleges of the country too is located here.

There are 4 major hospitals in the whole district of Lalitpur with a total bed capacity of 282. Three of these hospitals are located within LSMC, Patan Hospital, Mental hospital and Kustarog. There are also two private hospitals, B & B Hospital at Gwarko and Alka at Pulchowk.

The city of Lalitpur has good sports facilities consisting of national and local level sports infrastructure. Various International level sports facilities are available at Satdobato sports complex with swimming pool, shooting range, squash court.

Apart from district level offices there are several big central department including ministerial level office in LSMC e.g. Ministry of Health.

S.N	Type of offices	Number
1	Government offices	38
2	Ministries	4
3	Govt. Department Offices	
4	District Office	1
5	Municipality Office	1

Source: City Profile, LSMC 2005

Embassies and consulates of several foreign countries and number of international organizations working in Nepal have their offices located here in LSMC, including the United Nations Organization's office for Nepal at Pulchowk

One industrial estate situated at Patan Industrial Complex. There are about 150 industries in total in LSMC including 106 in Patan Industrial state. There are also numerous cottage industries (848), including handicraft and metallurgy factories, which are spread at different places of the municipality. Lalitpur, with its rich art and architecture, breath taking historic monuments and unique living culture and tradition, has much to offer to the tourist. There are 7 big hotels apart from number of small ones established here in the city, with world standard services and facilities. Altogether, more than 100 hotels and restaurant are located in LSMC, which generate significant amount of waste.

The major market centers in LSMC are at Kupondol, Pulchowk, Kumaripati, Lagankhel, Sanepa and Mangal-Bazaar area. There is vegetable market at Lagankhel and Dhoulgal Bazaar at ward no. 18 of LSMC. The daily-consumed market commodities are available in these market areas. Mangalbazaar being a center of the old city, have, since historic times been a major market center. The area also being close to the Patan Durbar Square the hot spot of tourists, several shops selling tourist goods, like handicrafts and souvenirs are located here. In total, more than 6,000 shops are in LSMC however very few of them are registered.

In LSMC, the commercial establishments (hotels, restaurants, shops), industries, institutional establishments (schools/colleges, offices etc.), health institutions and commercial activities in streets generates huge amount of municipal waste along with households.

# **Appendix-C**

***Waste generation and composition***

## Appendix-C: Waste generation and composition

The following description of waste generation and composition is based on the Solid Waste Management (W'SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, January 2014.

### Type of waste

The major sources of waste generation in Lalitpur are:

- Households
- Commercial establishments
- Institutions
- Industries
- Health institutions

In general, municipal waste covers the waste generated from households, commercial and institutional establishments. Medical and industrial wastes contain hazardous and infectious waste, which should be treated separately.

### Methods of waste generation and composition survey

Data on waste generation and composition has been based on the result of the SWM baseline assessment of municipalities of Nepal which was conducted in April to May 2012 by SWMTSC in collaboration with Asian Development Bank (ADB)<sup>18</sup>.

Waste from the households, institutions and commercials were categorized into the following eight different types:

- Organic waste
- Plastics
- Paper and paper products
- Textile
- Rubber and Leather
- Metals
- Glass
- Others (inert materials etc.)

The study was carried out by environmental officers (surveyors) with sufficient knowledge in the subject matter and with research experience under direct supervision of supervisors, team leader of baseline survey and staff of concerned municipality. Surveyors spent a minimum of 10 days to complete the field study. For this study, a household was defined as a number of people using one kitchen and not by the number of rooms or house types. During the survey, the surveyors informed each household, and institutional and commercial establishment that their wastes generated in a 24-hour period would be analyzed by providing waste collection bags. The surveyors collected the waste the next day to measure quantity (in wet weight basis) of eight different categories.

A separate questionnaire was developed for household and municipality to collect and to update different aspects of SWM. A pre-test was carried out and the questionnaire was fine-tuned before actual interviews.

### Waste generation and composition

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<sup>18</sup>Available from: ADB. Capacity Building for Waste Management: Status of Solid Waste Management in 58 Municipalities of Nepal. <http://www.adb.org/projects/documents/capacity-building-waste-management-status-sw-58-municipalities-nepal-tacr>

**Household waste**

From the field survey, the average per capita household waste generation rate in Lalitpur was found to be 0.186kg/capita/day<sup>19</sup>. The total amount of waste generation was found to be almost 42 MT/day from the household level of Lalitpur whereas nearly same amount of waste was generated from the institutional and commercial sector of Lalitpur.

Based on the analysis and findings, it is estimated that waste from households in general contributes to about 50% of the total MSW generation<sup>20</sup>. Thus, the average MSW generation was found to be 0.372kg/capita/day. With these per-capita waste generation rates and population for the year 2011, the total MSW generation from Lalitpur Sub-metropolitan city was estimated at about 84 MT/day<sup>21</sup>.

The household composition was as follows: organic wastes (79%), paper (10%), plastic (5%), metal (2%), glass (0.4%), rubber and leather (1%), textile (1%) and other waste (1.5%).

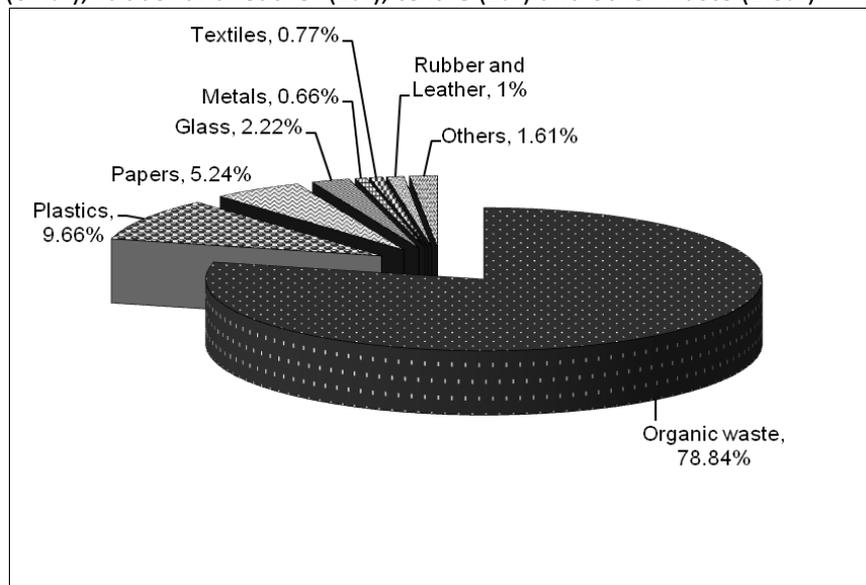


Figure C1 Composition of household waste in LSMC

**Institutional waste**

For the analyzing the waste composition generated from the different institutional sectors, one school and one Government or Non-Government office were selected from each ward. The institutional waste per institution was found to be 3.15 kg. The waste generated in 24 hours within the institutional section shows that 43% of paper and paper products followed by 23% plastics, 13% organic, 1.43 metals, 1% rubber and leather, 0.57% glass and remaining other waste. The other waste includes wood, cloth and dust etc.

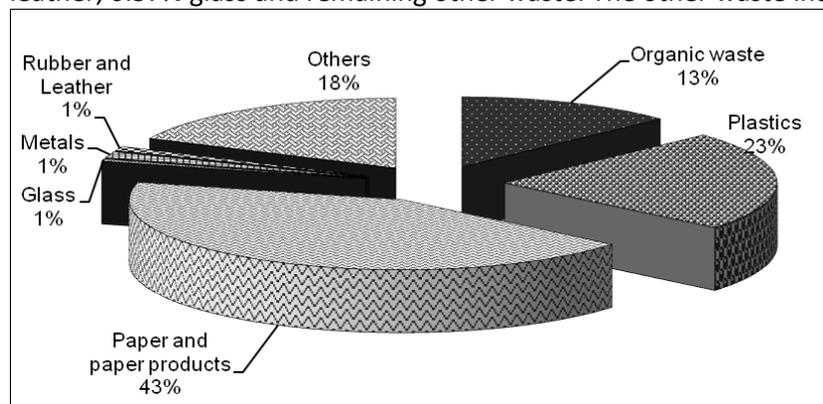


Figure C2 Composition of waste from institutional sector in LSMC

<sup>19</sup>Available from: ADB. Capacity Building for Waste Management: Status of Solid Waste Management in 58 Municipalities of Nepal. <http://www.adb.org/projects/documents/capacity-building-waste-management-status-swm-58-municipalities-nepal-tacr>.

<sup>20</sup>ibid

<sup>21</sup>ibid

### **Commercial waste**

One shop and one hotel or restaurant was selected from each ward for the analysis of the commercial waste. The commercial waste per establishment was found to be 3.38 kg. The overall composition of commercial waste of LSMC is shown below which shows that the organic waste is highest 38% followed by papers with 30%, plastics 23%

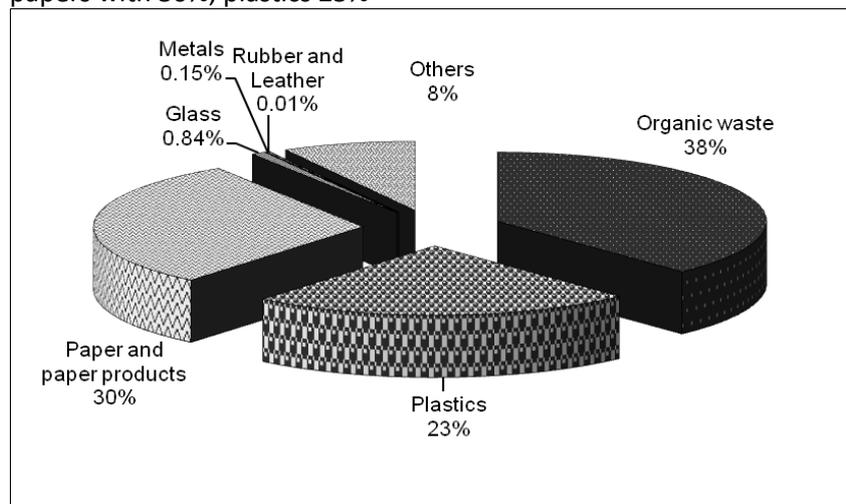


Figure C3 Composition of waste from commercial sector in LSMC

### **Composition of municipal solid waste**

The composition of household, institutional and commercial waste was averaged using weighted mean method to calculate the average composition of municipal waste as shown in Figure C4.

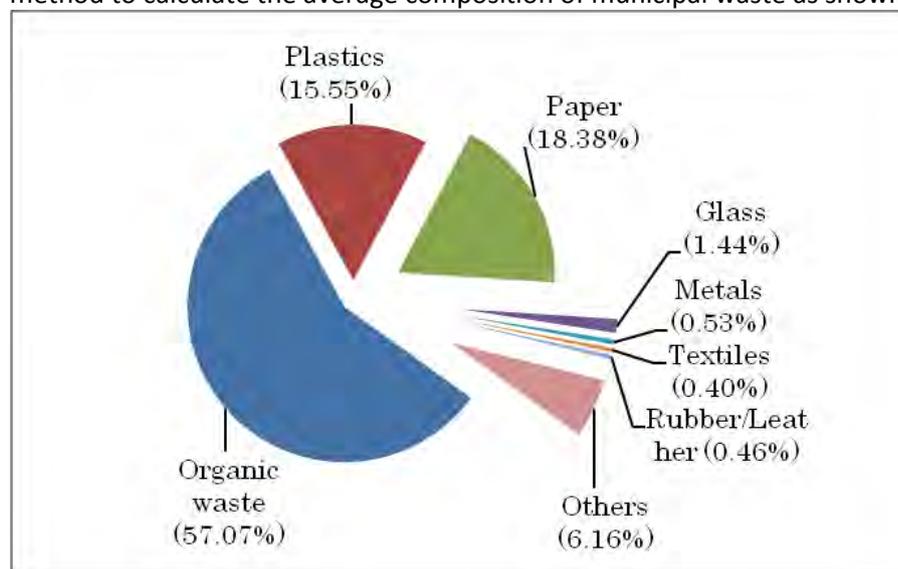


Figure C4 Composition of waste from commercial sector in PSMC

### **Forecast of waste generation**

The forecast of waste generation in the 4 years planning period 2015 to 2019 of the SWM-SIP is based on the following:

- Population Census of 2011: 226,728 inhabitants in 2011
- Population census of 2011: 3 new VDCs: 33,506 inhabitants in 2011
- Population growth rate: 3.35% per year
- Unit waste generation for municipal waste: 0.372 kg/capita/day in the planning period

The estimated waste generation in 2011 and the beginning and end of the 4 years planning period of the SWM-SIP is presented in Table C1 below.

**Table C1: Population and municipal waste generation in Lalitpur Sub-metropolitan City**

Ward	House-holds	Population			Municipal waste generation					
					kg/day			MT/year		
		2011	2011	2015	2019	2011	2015	2019	2011	2015
1	2,221	8,660	9,880	11,272	3,222	3,676	4,193	1,176	1,342	1,531
2	4,839	19,573	22,330	25,476	7,281	8,307	9,477	2,658	3,032	3,459
3	3,528	14,460	16,497	18,821	5,379	6,137	7,002	1,963	2,240	2,556
4	3,913	15,779	18,003	20,539	5,870	6,697	7,640	2,143	2,444	2,789
5	1,516	6,576	7,502	8,559	2,446	2,791	3,184	893	1,019	1,162
6	1,563	6,962	7,943	9,062	2,590	2,955	3,371	945	1,078	1,230
7	1,839	8,060	9,195	10,491	2,998	3,421	3,903	1,094	1,249	1,424
8	2,816	11,706	13,355	15,237	4,355	4,968	5,668	1,589	1,813	2,069
9	3,484	14,281	16,293	18,589	5,313	6,061	6,915	1,939	2,212	2,524
10	1,729	6,730	7,678	8,760	2,504	2,856	3,259	914	1,043	1,189
11	1,010	4,578	5,223	5,958	1,703	1,943	2,217	622	709	809
12	1,342	6,049	6,901	7,874	2,250	2,567	2,929	821	937	1,069
13	3,772	15,266	17,417	19,871	5,679	6,479	7,392	2,073	2,365	2,698
14	5,438	21,802	24,873	28,378	8,110	9,253	10,556	2,960	3,377	3,853
15	3,480	14,230	16,235	18,522	5,294	6,039	6,890	1,932	2,204	2,515
16	858	4,479	5,110	5,830	1,666	1,901	2,169	608	694	792
17	2,678	10,930	12,469	14,226	4,066	4,639	5,292	1,484	1,693	1,932
18	1,200	5,932	6,768	7,721	2,207	2,518	2,872	805	919	1,048
19	1,774	7,583	8,652	9,870	2,821	3,218	3,672	1,030	1,175	1,340
20	1,978	7,928	9,045	10,320	2,949	3,365	3,839	1,076	1,228	1,401
21	1,143	4,784	5,458	6,227	1,780	2,030	2,316	650	741	846
22	2,460	10,380	11,843	13,511	3,861	4,406	5,026	1,409	1,608	1,835
23	1,854	7,002	7,988	9,114	2,605	2,972	3,390	951	1,085	1,237
24	571	2,424	2,766	3,155	902	1,029	1,174	329	376	428
25	753	3,252	3,710	4,233	1,210	1,380	1,575	442	504	575
26	1,377	5,813	6,632	7,566	2,162	2,467	2,815	789	900	1,027
27	1,020	4,279	4,882	5,570	1,592	1,816	2,072	581	663	756
28	756	2,872	3,277	3,738	1,068	1,219	1,391	390	445	508
29	1,070	4,159	4,745	5,413	1,547	1,765	2,014	565	644	735
30	911	3,705	4,227	4,822	1,378	1,572	1,794	503	574	655
Total	62,893	260,234	296,897	338,725	98,818	112,441	128,024	35,335	40,313	45,992

**Special waste**

Patan Hospital and B&B Hospital have their own incineration to manage their hazardous medical waste. Other than that, there are no provision for the management of special waste such as medical waste, industrial effluents, dead animals etc. such hazardous waste were found mixed with the household waste and being collected together by the municipality and taken to the Balkumari transfer station and finally to the Okharpauwa landfill site.

# **Appendix-D**

*Existing solid waste collection, street cleaning and transportation system*

## Appendix-D: Existing solid waste collection, street cleaning and transportation system

The description and assessment is based on information received during site visits and meetings with Lalitpur Sub-metropolitan City, two private service providers and other stakeholders in December 2014 and February 2015. The collected information has to be verified and adjusted at the next visit to Lalitpur.

The population of Lalitpur was 227,000 in 2011 (approximately 250,000 in 2014 prior to the addition of the 3 new VDCs).

Collection services are provided in all 22 wards (prior to inclusion of the new VDCs) by LSMC (11 wards) and 14 private operators (11 wards).

The private operators have no written agreement with LSMC, there is no regulation of tariffs charged by private providers, and there is no framework for reporting of operational data to LSMC.

There is no consistent waste recording system in LSMC. Although the larger operators do record waste volumes based on the number and size of trucks, both the volume assessment and the subsequent conversion to weight is surrounded with significant uncertainties as trucks may be partly filled and waste density varies considerably between operators. The below data are calculated based on households served and truckloads recorded by the operators.

These data assess the total collection in Lalitpur at 85 tons daily of which 55 tons/day is collected by LSMC, while the remaining 30 tons collected by the private sectors the three largest private operators (NEPCEMAC, Sirjansil and WEPCO,). This does not include the unknown but relatively limited waste volume collected by small private operators.

It is estimated that 18% of the collected waste is separated by the operators for recycling prior to transport of the residues to the landfill.

**Table D1: Waste collection and segregation by largest operators in LSMC**

Operator	Customers (households)	Waste collected in LSMC (MT/day)	Share of waste recycled/recovered (MT/day)	Share of waste recycled/recovered (% of collected)
LSMC	25.400	55	10	18%
NEPCEMAC	5.800	20	2	10%
Sirjansil	2.000	6	2	33%
WEPCO	1.800	4	2	50%
Total	35.000	85	16	18%

*Note: Waste collection and recovery volumes are based on interviews with operators and highly uncertain due to lack of formal measurement.*

### Collection Route of LSMC for Primary Collection is given Figure No.2

The current status of equipment/vehicle being mobilized by LSMC in its waste management and other related sanitation service is elaborated in the following<sup>22</sup>. The operational condition of each of the items has been divided into four categories

Category 1: Equipment/vehicles that are in good operating condition, however with preventive maintenance and occasional minor repairs.

Category 2: Equipment/vehicles not in use:

<sup>22</sup> Source: Paper prepared by Mr Pradeep Amatya, LSMC

Equipment/vehicles that are presently not in operation due to the lack of some important minor repairs and expected to be in operation after necessary repair

Equipment/vehicles that are presently out of operation due to the lack of some major repairs of mechanical parts such as engine, pump, gear box etc and expected to be in operation after necessary major repairs as per condition

Equipment/vehicles that are totally out of operation and even with major repairs seems not possible to set in regular operation.

Table D2 below provides an overview of existing equipment/vehicles and condition of the the equipment/vehicles of LSMC. The overview reveals that most of the equipment/vehicles are 20-30 years old and urgently need replacement.

**Table D2: Existing condition of equipment / vehicles of LSMC**

Types of services	Equipment /vehicle type	No of equipment /vehicles				Manufactured year
		Total	Operating	Not in use	Donated by	
Street Cleaning	Handcart	10	4	6	Purchased	
Pick up Service	2.3 m <sup>3</sup> Tractor (EICHER)	2	1	1	Purchased	1995
	3.5 m <sup>3</sup> Tipper (EICHER)	16	12	4	Indian Government	1998
Container Service	4.5 m <sup>3</sup> dumper placer (EICHER)	4	2	2	Indian Government	1998
	6 m <sup>3</sup> dumper placer (TATA Truck with Indian Hydraulic)	2	0	0	SWMRMC	1985
Secondary Vehicles	15 m <sup>3</sup> roll of container (Ashok Leyland)	4	4	0	Japanese Government	2005
Other Sanitary Service	6 m <sup>3</sup> Big suction cum jetting machine	2	1	1	Indian Government	1998
Heavy Equipments	JCB loader	2	2	0	Indian Government	1998

Source: Environment and Sanitation Section, LSMC, 2015

Table D3 below provides an overview of the vehicle fleet and staff of LSMC and the three largest private operators.

All four operators provide street sweeping in their service areas. The three private operators provide door-to-door and bring-to-truck collection on a bi-daily basis and collect a tariff of 75-300 NPR/mth/household for their service. The municipal operator provides roadside collection and bring-to-truck collection and does not charge for the service.

The City operates one segregation and transfer station where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at the Okharpauwa landfill (jointly operated by Kathmandu and Lalitpur), 43 km from the city. It is noted that there is room for improvement of the design and operation of the segregation and transfer facility as residuals are stored overnight in the transfer vehicles or at the sorting facility (good practice requires that residuals are not stored at the facility overnight).

Old worn out vehicles are stored at the transfer station and take space for activities at the facility. If the site was cleaned up and old worn out vehicles removed to another site there will be space for improved operation and introduction of new activities at the temporary transfer station as e.g. a small simple MRF that could increase the efficiency of waste segregation and the working conditions of the segregation staff.

LSMC has developed a proposal to improve the facility with installation of mechanical facilities and improved mechanical workshop and bailers. LSMC require one loader for daily operation and waste transfer from platform to secondary transport vehicles. The project is supported by the SWMTSC.

LSMC have proposed a new transfer station (TS) in Sundarighat Ward No.4 and has allocated 50,000 Sq.ft land to develop the TS. Due to lack of budget the TS couldn't develop up to now. The LSMC has discussed with stakeholders and surrounding people regarding the transfer station and initial environmental examination (IEE) has been completed. Boundary wall and greenery development and physical infrastructure shall be developed at the site of the transfer station.

The three largest private service providers each have their own segregation and transfer stations and vehicles for transport from the transfer station to the Okharpauwa landfill.

LSMC consider street cleaning as the prime function of the municipality to keep the city clean. It is the visible and significant symbol to demonstrate the city as clean city. City dwellers are eager to realize clean environment and for that cause they are willing to pay for the service. The municipality will focus on improving the service in making the street clean. The street cleaning should improve from traditional sweeping system to modern sweeping system by introducing convenient and realistic approach. All the streets, narrow roads, pavement and pedestrians , squares, bahal ,bahil , heritage sites and open spaces should be cleaned. LSMC has limited human power reduced from 210 sweepers to 133 sweepers .They are mobilized by 5 supervisors.

Inorder to improve the street cleaning services the existing street sweeping services should be supplemented by introduction of mechanical broomers as well as small tippers and hand carts for collection of the sweepings immediately after street sweeping.

The street sweeping takes place early in the morning. Currently the sweepings are collected in connection with the waste collection in the area, which means that the sweepings will be stores at the kerb side and colletedsome times several hours after the street sweeping.

# ***Appendix-E***

***Recycling and composting***

## Appendix-E: Recycling and composting

LSMC has successfully implemented an ambitious pilot project in Ward 22 (10,100 people in 2,460 households) on sustainable waste management, with household segregation and composting and reuse. The project involved recovered materials being purchased by women's groups supported by the municipality and resulted in only limited need for residual waste collection. The City plans now for expansion of the project to Ward 9, 16 and 18.

Furthermore, under a recently signed EU funded project 12,500 households are going to be equipped with segregation bins and compost bins. The project also includes piloting of rooftop gardening, as well as three compost plants (3 MT/day each) and one biogas plant for slaughterhouse waste (½-1 MT/day out of a total of 2 MT/day).

Some NGOs and private operators have also conducted waste segregation pilots. NEPCEMAC has a 1,200 household segregation pilot in KTM and WEPCO has a 200 household segregation pilot in Lalitpur.

The municipal operator and the largest private service providers carry out manual separation of recyclables at their segregation and transfer facilities. The three largest private operators recover and recycle around 17 tons/day (33% of collected volume) through manual sorting. At the municipal transfer station the assessed recycling is in the order of 3 tons/day (5% of collected volume). No mechanical material recovery facility (MRF) is in operation.

With above recycling initiatives and the informal recycling by waste pickers Lalitpur municipality expects to meet the targets in the Strategic Plan on 40% recovery of organic waste and 40% recovery of recyclable fraction in 2018, see Section 0. Thus, the LSMC does not consider it necessary to provide bins (compost and segregation bins) and composting facilities or technical support in the OBA project.

The Kathmandu Valley waste recovery and recycling market is large and dynamic with an estimated 800 scrap dealers (Kawadis) of which around 115 are in Lalitpur, NGOs and women's groups, as well as at least 8,000 informal waste workers (identified by the Prism Project / Practical Action).

The 2013 study 'Recycled Materials from Solid Waste Stream in Kathmandu Valley: Recovery and Economic values, SWMTSC, February 2013' estimated the total volumes of recycled materials in KTM valley. We have in the table below assessed the recycled volumes of major recyclable materials for which a market exist and the total income generated from such recycling activities in Lalitpur.

**Table E1: Assessed value of recovered materials in LSMC**

Reusable/Recyclable Materials	Daily recovered amount (ton or pieces*/day)	Market price (NPR/kg or piece*)	Total market value (NPR/day)	Total market value (Million NPR/year)
Plastics (plastic utensils, bottles, bags, etc.)	3.0	17	51,000	18.6
Paper (newspaper, office paper, books, carton, etc.)	6.0	10	60,000	21.9
Metals (iron, tin, zinc, etc.)	7.0	29	199,500	72.8
Aluminium cans*	2,800	1	2,800	1.0
Glass bottles*	9,000	3	22,500	8.2
Batteries	0.6	79	47,400	17.3
Total	17,5 MT/day		383,200 NPR/day	140,0 Million NPR/year

*Note: The applied prices are 2013 average prices cited by scrap dealers. The totals do not include smaller amounts of other recyclables (e.g. textiles). Recovered materials for which no market exists (e.g. compost from organic waste) are excluded.*

# **Appendix-F**

*Existing SWM organisation including private sector participation*

## **Appendix-F: Existing SWM organisation including private sector participation**

Existing solid waste management organisation including private sector participation

A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers has been established and usually convenes on a monthly basis. At the operational level, the Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects.

Communication with key stakeholders such as private sector organizations, women group, TLOs, NagarikSamaj (citizen forum) and NGOs is the responsibility of the Environment Section, which organizes quarterly stakeholder meeting. The Environment Section head of LSMC is responsible for reporting to the municipal board.

LSMC is providing SWM service to core city area and open courtyards. LSMC vehicle move along 73 defined routes and collect waste along the road informing people by siren. Most of the routes are served daily, some 3 times a week and few only once a week. The SWM service delivery is limited to monitoring of the vehicle log book and the waste collected from the specific route of that vehicle. However, in practice service is mainly evaluated based on cleanliness of streets and complain from nearby people.

Vehicle use and fuel consumption is logged, but fuel provision by supervisor is based on normative consumption for specific route, and fuel efficiency is not monitored.

Waste records are kept at transfer station and landfill based on type of vehicle (to calculate volume of waste) and number of vehicles arrived at landfill. The weigh bridge has been damaged and out of operation for years and therefore only assessed volume of waste can be recorded. The quantity of waste is reportedly considerably different in similar vehicles from private sector and that from municipality, indicating that the private sector operators are more efficient.

Waste collection and transportation through the municipality is recorded by the Environment Section under LSMC. Expenditure for repair and maintenance of vehicles, tools and equipment and fuel consumption is recorded by the Account Section of LSMC based on instructions by the Environment Section. The cost of landfill operation is handled by KMC, with LSMC providing the amount required by the Landfill Operation Unit and recommended by SWMTSC. All financial transactions are recorded at LSMC and audited as per government rule by internal and external auditor every year.

The total number of municipal employees in SWM is 206, including 4 administrative officers, 5 supervisors, 15 drivers, 40 loaders, 9 mechanics, and 133 sweepers.

Involvement of NGOs/CBOs and Private Companies

### Private companies and NGOs

There are 16 private operators (See Table F1) active in waste collection in LSMC. The private operators all have an NGO background, but all are effectively dual registration now, with one company for business activities and one company for NGO activities.

None of the private operators have formal written agreements with the municipality and the operators interviewed cite a number of challenges related to the present system:

- The lack of agreement with municipality and the lack of formal recognition of their business by municipality limits their access to finance and prevents them from investing in vehicles and equipment and expanding their business
- A major barrier to further recycling is the difficulties of obtaining land for waste management activities as such activities are unpopular with neighbours

- The free service provision by the municipal provider in the core areas is a challenge to the perceived legitimacy of charging for waste management services by the private operators
- Not all households pay and there are no means of enforcement

Further to the private operators, an estimated 115 scrap dealers (Kawadis) are active in Lalitpur.

### **CBOs**

There are around 500 TLOs in LSMC. They are active in community mobilization including in relation to solid waste management. The SWM strategic plan foresees a supporting role for the TLOs in most of the identified activities and explicitly includes activities on developing capabilities of TLOs, woman groups and private sector etc. in waste management.

### **Informal sector**

The Prism Project (Practical Action) has in close cooperation with Kathmandu Valley municipalities identified 8,000 informal waste workers in the valley, but assess that the total likely is to be 15,000. Many are migrants and about half are from India. Many are seasonal workers supplementing agricultural income. The informal sector includes waste pickers (street), waste segregators (in scrap centres), door-to-door collectors (with tricycle), dry waste buyers (feria with cycle) and small scrap owners (dealers). The project has helped establish the organization SASAJA for the informal workers (700 joined out of 4,000 addressed) which performs social recognition activities including providing membership cards (double as identify cards in encounters with government), preventive health care and training, and establishing community resource centres. Furthermore, the project has facilitated the establishment of a joint price list for recoverable materials in cooperation with the waste sector.

### **The KTM Valley SWM PPP**

The Investment Board of Nepal, on behalf of the PM office, 5 ministries and the SWMTSC has initiated a process of PPP in SWM and energy generation in KTM Valley. The tender is structured in three geographical packages, of which Package 2 covers Lalitpur and Kirtipur. The tender process was initiated in 2009 and in 2014 the GoN decided to award the project and proceed with negotiations.

The major components of each package are collection, transport and processing of all municipal solid waste as well as street cleaning and river bank clean-up. All technical options are left open to the bidders subject to a Detailed Project Report (DPR) to be completed by bidder within 6 months (+3 month extension) after issue of a work order for the DPR by Nepal Investment Board on February 11 2015. The EIA will start in parallel with DPR. Energy generation is subject to signing a reasonable PPA and will be partly for own purposes and partly sold to grid. DPR approval and signing of concession agreement is expected to be end 2015 at earliest after which 2 years is available for plant implementation. Hence, operation on the ground will start at earliest 3 years from end 2015.

The contractor will collect tariffs directly from waste generators and pay a concession fee (fixed amount in tender). The tender is evaluated on purely financial parameters; a combination (i) tariffs (per ton); (ii) concession fee; and (iii) least concession period. The typical concession period bid is 20 years + construction period. The typical concession fee is 20%. Waste collection tariffs in the tenders were in the order of 200 NPR/household/month (2014 money). It is expected that the contractual counterparts will be the municipalities whereas the concession fee will go to the central government (not clear to whom). A tariff review committee headed by MoF, with representation of the private parties and municipalities will review tariffs. Land will be provided by the government. There is no requirement for takeover of incumbent workers and equipment is not a requirement, but this may be negotiated. A total of 72 NGOs involved in SWM in the KTM Valley in 2011 were consulted by the bidders, and many have commercialized and joined the project. There are however no formal requirements to integrate the informal sector.

**Table F1: List of Active Private Sector Service Providers in Lalitpur Municipality**

SN	Service providers
1	CEP
2	Fulbari
3	Jupital tole sudhar samiti
4	Macha raja Nepali
5	Multipurpose research and Namuna
6	NEDEC
7	NEPSEMAC
8	NGO
9	Nepal Bikas Aviyan
10	Sirjansil Batabaran Sanrachan kendra
11	WEPCO
12	WIED
13	creative environment kendra
14	janachetana fohar maila byawasthapan samuha
15	tole committee
16	women environment group

# **Appendix-G**

*National policy and legal framework*

## Appendix-G: National policy and legal framework

The Solid Waste Management Act 2011 provides an overview of the responsibilities of municipalities in Nepal regarding management of waste in the municipality. Other relevant national acts and guidelines include:

- Environmental Protection Act (EPA) 1997 and Environmental Protection Regulation (EPR) 1997;
- SWMRMC - Initial Environmental Examination (IEE).Format for Solid Waste Management Facilities in the municipalities of Nepal;
- SWMRMC - National Environmental Impact Assessment (NEIA). Guidelines for Solid Waste Management Project in the municipalities of Nepal; and
- Solid Waste Management Technical Guidelines for Municipalities of Nepal

A brief summary is provided in the following sections

### The Solid Waste Management Act 2011

In the context of SWM, the Municipalities are statutorily responsible for:

- Constructing and operating the infrastructure required for the collection, final disposal and processing of solid waste (including transfer station, landfill site, processing plant, compost plant, bio-gas plant) either directly or through outsourcing/ partnerships with private sector<sup>23</sup>. Inter alia, this includes
- Promotion of reduction, reuse and recycling of solid waste and formulation and enforcement of necessary directives.
- Prescribe guidelines for segregation of solid waste (at least organic and inorganic) at source.
- Provision of necessary technology, goods, equipment, containers, etc. to waste producers.
- Designation of Solid Waste Collection Center by arranging for location of container.
- Setting out the time, location and method for discharge of solid waste into the Collection Center.
- Transportation of SW from Collection Center to the Transfer Station or Sanitary Landfill Site.
- Day to day operations of the sanitary landfill.
- Impose<sup>24</sup> and collect service fee from the waste producer; suspend or terminate services to a waste producer who does not pay the service fee; further, if a waste producer discharges SW in ways other than the prescribed time and place, impose fines up to NPR 5000/ 10000/15000 for the first/second/ third violation respectively."

Managerial / administrative oversight to the above sections and the municipality as a whole is provided by the Executive Officer. In the absence of elected representatives (Municipal Council, Mayor, Deputy Mayor), it is understood that several subject specific committees with representation from political parties and other stakeholders have been formed.

### Environmental Protection Act, 1996 and Environmental Protection Regulation, 1997 (EPA and EPR)

In the process of internalizing the environmental assessment system in development proposals, government of Nepal enacted the EPA 1996 and EPR 1997 which make the integration of IEE and EIA legally binding to prescribed projects. EPR was amended in 1999. The EPR adopts the environmental assessment criteria mentioned in the National EIA Guidelines. However, the EPR establishes the administrative framework for assessing, exhibition and determination of the EIA, in terms of issues needing to be addressed and the format of EIA document. Social aspects are included in the EPA and EPR

SWMRMC - Initial Environmental Examination (IEE).Format for Solid Waste Management Facilities in the municipalities of Nepal

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<sup>23</sup> However, the responsibility for managing hazardous / medical / chemical waste to prescribed standards rests with the waste producer; the Local Body can provide services for final disposal after processing on payment of a fee.

<sup>24</sup> Fee / service standards to be in line with policy determined by Solid Waste Management Council chaired by Minister for Local Development.

The IEE is a planning tool for integrating environmental consideration and public involvement into development project for solid waste management. The main objective of developing IEE Format for solid waste management facilities such as sanitary landfills site, transfer stations and compost plants has been to build the capacity of municipalities in conducting the IEE efficiently.

SWMRMC - National Environmental Impact Assessment (NEIA). Guidelines for Solid Waste Management Project in the municipalities of Nepal

The overall objective of the EIA Guidelines for SWM projects is to improve urban environment through proper management of solid waste in a sustainable manner.

The guidelines address SWM issues in all stages of activities from strategic environmental assessment of SWM related policy, plan and programs to post evaluation and revision of environmental management guidelines

Solid Waste Management Technical Guidelines for Municipalities of Nepal

The guidelines have been prepared by the SWMTSC with the support of UN-HABITAT. The aim of the guidelines is to assist municipal solid waste managers as well as policy makers in establishing efficient and effective solid waste management systems in Nepalese municipalities.

The guidelines are based on the following basic principles:

- Integrated and sustainable waste management systems should be promoted;
  - The 3-R principle (reduce, reuse and recycle) should be promoted at all levels;
  - Waste should be segregated at source to maximise recycling;
  - The practise of dumping waste on streets or open areas for collection should be stopped and more efficient forms for waste collection that minimise waste handling and exposure to waste should be promoted;
  - Open waste dumps should be replaced by controlled dumps or sanitary landfilling;
  - Recycling should be maximised and only non-recyclable waste should be landfilled;
  - Environmental impacts of waste should be minimised;
  - Polluters pay principle should be applied to minimise waste production, recover cost and make the SWM system as a whole sustainable; and
  - Participation of local communities and private sector in SWM should be encouraged
1. Useful for the finalization of the OBA SIP report and expressed confident that jointly the municipality and the PS organizations will be able to secure Clean Lalitpur at the end of the OBA project in next 4 years.

# ***Attachments***

# ***Attachment-1***

***Terms of Reference***

## **Terms of reference for Solid Waste Management Service Improvement Plans (SWM-SIPs)**

### **Attachment 1. Terms of Reference**

#### **1. Background**

The World Bank, acting as administrator for the Global Partnership on Output-Based Aid (GPOBA), has approved a grant of US \$4.3 million to the Government of Nepal to implement the Project 'Output Based Aid (OBA) for Municipal Solid Waste Management' (hereinafter referred to as the 'OBA Project'). The grant finances service delivery subsidies for selected participating municipalities, over a four (4) year period, to cover the gap between the costs of delivering solid SWM service and the beneficiary revenues collected through SWM fees, provided that the services meet verified minimum performance criteria. Subsidies will be paid to municipalities based on agreed multiples of verified beneficiary revenue collected upon the services' meeting per-agreed minimum performance criteria.

The project aims to improve access to high quality and financially sustainable SWM services in Participating Municipalities through the provision of a performance based service delivery subsidy (the OBA Subsidy) to support gradual improvements in cost recovery in parallel with service quality improvement over a four-year period. The disbursement of the OBA Subsidy will be subject to two separate independent verifications: (i) a technical verification to confirm the quality of SWM services provided; and (ii) a financial verification to confirm the level of beneficiary revenues collected (the basis for calculation of the OBA Subsidy).

The project initially targets six municipalities (Tansen, Dhankuta, Lalitpur, Lekhnath, Pokhara and Ghorahi) and benefits an estimated total 800,000 people. The Solid Waste Management Technical Support (SWMTSC) and the Town Development Fund (TDF) are jointly providing technical and project management support to the Participating Municipalities to implement the activities covered by the output-based aid (OBA) grant. In accordance with the grant agreement, SWMTSC and TDF signed a Memorandum of Understanding (MoU) which lays out the responsibilities of each agency under the project. Participating Municipalities will each sign Tripartite Project Implementation Agreements (TPIA) with TDF and SWMTSC as a basis for participation in the project.

#### **2. Solid Waste Management Service Improvement Plans (SWM-SIPs)**

The Project requires Participating Municipalities to (i) prepare SWM-SIPs identifying those service delivery improvements to be covered under the project; (ii) decide on the service delivery model; (iii) implement service delivery improvements as per agreed plans; and (iv) implement a designated SWM fee charged to all waste generators, and collect the revenues.

The SWM-SIP is central to project implementation at the municipality level as it defines the service improvement strategy and targets under the OBA project which feeds into both the subsidy determination and the performance scorecard for each municipality. The SWM-SIP fits within the long-term strategy for the municipality.

SWMTSC has major role to provide technical support to participating municipalities under the project, including support in preparing SWM-SIPs. In this regard, SWMTSC intends to hire consulting services to prepare SWM-SIPs in four municipalities (**Lalitpur, Pokhara, Lekhnath and Ghorahi**) which constitute the second batch of municipalities to participate in the Project. These four municipalities have already prepared their long-term strategic plans for SWM, with the support of SWMTSC. What they need now is a short-term action plan (SWM-SIP) to translate the strategy into a set of actions and initiatives aimed at improving the quality and financial sustainability of SWM services.

### 3. Objectives of the Consultancy

The main objective of the consulting services is to prepare SWM-SIPs for four municipalities- i.e. **Lalitpur, Pokhara, Lekhnath and Ghorahi**.

For each municipality, the scope of services to be undertaken shall include: (i) review of existing SWM situation and SWM strategic plans; (ii) collection of baseline data as per the performance scorecard and SWM results-framework for the OBA Project; (iii) defining a short-term SWM service improvement objectives and targets to be achieved under the OBA Project; (iv) formulating, a four-year action plan to achieve the service improvement objectives and targets, through a consultative process; (iii) developing an excel-based model of costs, tariff and OBA subsidy requirements based the subsidy determination framework and templates already agreed under the project; and (iv) facilitating a series of stakeholder workshops to disseminate the SWM-SIP and to seek buy-in from all stakeholders.

### 4. Detailed Scope of Services

For each municipality, the consultant shall undertake the following tasks:	Responsible
<b><i>Task 1: Review existing situation and the SWM strategic plan for each municipality</i></b>	
The scope of services under this task shall include, but not necessarily limited to followings:	
a. Review all previous SWM studies, strategies and plans developed for each municipality, and summarize the main elements of each municipality's long-term strategy for SWM	

<p>b. Review existing baseline technical data and information on all aspects of SWM, identify gaps and suggest ways to improve the quality of available data and information. The consultant shall categorize existing data and information into two categories (i) data that is required as a <b>critical input</b> to preparation of the SWM-SIP this will main include data on the indicators contained in <b>technical scorecard</b> for the OBA project, and <b>overall project results framework</b> as provided in the project operations manual; and (ii) data that is required for future overall monitoring and evaluation of SWM in the municipality. The consultant shall <b>collect and synthesize all available baseline data</b> under the first category, and carry out <b>additional limited surveys/studies</b> (where necessary) to improve the quality of information on which the SWM-SIP will be based. The review of existing data and information shall include, but not limited to the following:</p>	
<ul style="list-style-type: none"> <li>• Review of waste generation data, including estimates for waste generation rates and composition</li> </ul>	
<ul style="list-style-type: none"> <li>• Review of existing waste collection, street cleaning and transportation system in different areas/wards of the municipality including frequency of waste collection and street sweeping; number and age of equipment and vehicles and garage/workshop, number of drivers, waste collectors and street sweepers; collected amounts, and collection routes etc</li> </ul>	
<ul style="list-style-type: none"> <li>• Review existing solid waste recycling system, including data on existing formal and informal systems for separation or collection of recyclable materials, collected amounts and price of the recyclable materials</li> </ul>	
<ul style="list-style-type: none"> <li>• Review data on existing waste treatment facilities (such as composting) including capacity and number of units, location of the facilities, number of staff; possible problems with the existing facilities etc.</li> </ul>	
<ul style="list-style-type: none"> <li>• Review data on waste disposal, including type and number of facilities; amount of waste disposed per year, total and remaining capacity of the facility; lacion of the facility; equipment used at the facility; number of staff; monitoring and registration systems; management of hazardous wastes; and possible environmental</li> </ul>	

problems including community complaints etc.	
c. Review existing financial and institutional set-up for SWM in each municipality, including but not limited to the following aspects:	
<ul style="list-style-type: none"> <li>Existing organization of the solid waste function (staffing, reporting arrangements, performance management etc)</li> </ul>	
<ul style="list-style-type: none"> <li>Existing role of TLOs, NGOs and Private Companies, and how they relate to the municipality</li> </ul>	
<ul style="list-style-type: none"> <li>Existing information and awareness activities</li> </ul>	
<ul style="list-style-type: none"> <li>Existing tariff structure for SWM; method of collection of fees and efficiency (% of total potential fees collected for households and commercials etc.</li> </ul>	
<ul style="list-style-type: none"> <li>Existing financial envelop for SWM in the municipality, including budget and actual expenditures for solid waste management activities in each municipality as well as total budget and expenditures; and sources of financing.</li> </ul>	
<ul style="list-style-type: none"> <li>Existing municipality policies and by laws, council resolutions, and executive orders pertaining to solid waste management in the municipality and how they are implemented.</li> </ul>	
d. Identify the key gaps and weakness of existing SWM services in each municipality, and make preliminary recommendations on the most urgent and cost-effective options for improving quality and financial sustainability of SWM services over a four year period. A priority list of identified urgent service delivery and cost recovery challenges shall be prepared. It is not likely that the municipality can solve all problems immediately so it is important to prioritize the most urgent service delivery challenges as basis list plan is developed as basis list plan is developed as basis for the development of the SWM-SIP	
e. Conduct consultative meetings and workshops with all relevant stakeholders (municipal staff, political leader, TLOs, NGOs and private sector) to seek consensus on the identified service delivery and cost recovery gaps to be addressed in the SWM-SIP	

<b>Task 2: Development of SWM-SIPs</b>	
The scope of services under this task shall include, but not necessarily limited to Following:	
a. Define service and financial objectives and targets to be achieved over the four year period of the OBA project. The objectives and targets must be specific, measure able, and achievable with a four year period, and targeted as specific service delivery and cost recovery challenges identified under Task 1 above.	
b. Conduct consultative meeting and workshops with the municipality staff to seek consensus on the service delivery improvement objectives, targets and action plans	
c. Identify a set of concrete actions to be taken each year in the four years period, in order to achieve the objectives and targets. Given the short-term nature of the SWM-SIP, the proposed actions must be limited in number and scope, and focused only on what the municipality needs to do in number and scope, and focused only on what the municipality needs to do in order to achieve the service and cost recovery objectives, consistent with performance scorecard of the OBA project. The actions may cover all or some of the following aspects (depending on the situation in each municipality)	
<ul style="list-style-type: none"> <li>• Improvements in waste collection, street cleaning and transportation systems, including new areas to be served, collection frequency, purchase of new collection vehicles, repair/replacement of existing collection vehicles and equipment etc.)</li> </ul>	
<ul style="list-style-type: none"> <li>• Recycling and recovery systems and facilities-</li> </ul>	
<ul style="list-style-type: none"> <li>• Improvement in operation of landfill and other disposal/ treatment facilities; and closure of dumpsites</li> </ul>	
<ul style="list-style-type: none"> <li>• Actions to increase private sector participation in waste collection; as well as developing partnerships agreements with TLOs, NGOs and private companies.</li> </ul>	
<ul style="list-style-type: none"> <li>• Possible cooperation with other municipalities about solid waste</li> </ul>	

management, e.g. a joint landfill facility.	
<ul style="list-style-type: none"> <li>• Institutional strengthening actions, including establishment of SWM Subject Committee, dedicated section/ unit for SWM, involving of PPP in MSW, development of operation guidelines for waste management facilities as well as development of recording systems</li> </ul>	
<ul style="list-style-type: none"> <li>• Capacity building and awareness creation, including training and capacity building activities for staff in order to improve the management of the SWM system in the municipality. Information and awareness activities to be implemented for general awareness raising and information about services and SWM fee collection</li> </ul>	
<b><i>Task 3: Develop an Excel-based model of costs, tariff and OBA Subsidy requirements</i></b>	
<p>a. Develop SWM cost models for each municipality (based on the priority interventions/actions selected) and make recommendation on SWM fees to be charged and OBA subsidy required. The consultant will utilize the General Cost Model as well as Subsidy determination framework developed for the OBA project as described in the project operations manual</p>	
<p>b. Conduct a limited willingness to pay survey of sample of households and business entities in each Municipality to confirm acceptance and affordability of recommended SWM fees. The consultant will utilize the sample questionnaire provided in the project operation manual</p>	
<p>c. Conduct several consultative meetings and workshops with the municipality staff to ensure seek consensus on the service delivery important objectives, targets and action plans</p>	
<b><i>Task 4: Prepare an Outline Environmental and Social Management Plan (ESMP)</i></b>	
As part of the SWM –SIP, the consultant will prepare an outline ESMP in accordance with the guidelines contained in the project operations manual. This will involve identifying the environmental and social impacts associated with each action/intervention contained in the SWM-SIP, and possible mitigation measures.	

## 5. Deliverables and Timeframe

It is expected the scope of services outlined above will be performed over a period of **8 months**. This list of deliverables which the Consultant is expected to produce during this period is outlined in the table below.

**Table 1- List of Deliverables**

Activities	Deliverables (6 copies of each report)	Time-frame	Final Date
<b>Contract Signed</b>			<b>Feb 10</b>
<b>Effective Date</b>			<b>Feb 25</b>
Inception	<b>Inception report</b>	2 weeks after commencement date	Mar 10
Task 1: Review existing situation and the SWM strategic plan fro each municipality	<b>Draft Situational Analysis Reports</b> (no More than 5 pages each report)	1 months after commencement date	Mar 25
	<b>Final Situational Analysis Reports</b> (No More than 5 pages each report. Details can be provided in annexes)	2 months after commencement date	Apr 25
Task 2: Development of SWM-SIPs	<b>Draft SWM-SIPs</b> (no more than 10 pages. Details can be provide in annexes)	3 months after commencement date	May 25
Task 3: Develop an Excelbased model of costs, tariff and OBA subsidy Requirements	<b>Excel-Based Models for each Municipality</b>	4 months after commencement date	June 25
Task 4: Prepare an Outline Environmental and social Management Plan (ESMP)	<b>Draft Outline ESMP</b> (no more than 5 pages, as annex to final SWM-SIP)	4 months after commencement date	June 25
	<b>Draft Outline ESMP</b> (no more than 5 pages, as annex to final SWM-SIP)	5 months after commencement date	July 25
Completion of assignment	<b>Draft Final SWM-SIPs</b> (no more than 10 pages. Other details should be in annexes)	6 months after commencement date	Aug 25
	<b>Final SWM-SIPs</b> (no more than 10 pages. Other details should be in annexes)	8months after commencement date	Oct 25

All reports for each municipality shall be prepared in English and the final SWM-SIP report shall be translated in Nepali. The reports (6 copies) shall be submitted in hard copies as mentioned above and in soft copies in CD.

With respect to each of the deliverables listed in the table above, the Consultant shall meet the following requirements:

- The Consultant shall submit each deliverable to SWMTSC and each participating municipality for review and approval of the substance and recommendations contained therein;
- The Consultant shall conduct extensive consultations and workshops with municipality staff and stakeholder before issuing any of the reports. Draft reports shall be discussed in stakeholder workshops/meetings to be facilitated by the consultant. The consultant shall prepare minutes of all stakeholder consultations and incorporate the findings of these consultations in the final reports
- In preparation of the reports, the Consultant shall (i) consult with participating municipalities, SWMTSC and TDF while the documents are being developed; (ii) endeavor to develop plans that can be implemented using municipality's own revenue sources; and (iii) make recommendations that are affordable/ sustainable given the applicable financial position of each participating municipality
- The Consultant shall ensure that, in addition to any other requirements specified in the detail scope of works above, each of the documents contain: (i) recommendations that are consistent with applicable Government laws; (ii) an analysis of the cost implications of the recommendations; (iii) an implementation plan of the recommendations;

#### 6. Team Composition and Estimated Level of Effort

The consultant's team shall comprise at least the following personnel as shown below:

S.No	Position	Inputs MM
1	<b>Team Leader/SWM expert</b> (Act as team leader and coordinate with SWMTSC and municipalities, overall design and plan frame work for study of solid waste management situation in municipalities, establish bench mark and develop sustainable service improvement plan and reporting etc.)	6
2(a)	SWM Expert (Land Fill) (Responsible for Fill Site need assessment , Identify Land fill Site, Develop Landfill site for worst case scenario, .....	5
2(b)	SWM Expert (3R) (Responsible for assessment waste 3R activities and its potential to divert waste from Landfill by using different 3R activities and plan suitable 3R activities	5

3	Economist/Financial Expert (responsible for study of existing financial management and cost of waste management and plan for sustainable cost modeling and plan for tariff collection and financial projection for each municipality)	3
4	Public-Private Partnerships (PPP) Expert responsible for study of existing model of participation of CBO,NGO and private sector in SWM and prepare suitable model and necessary documents for PPP model and contract for each municipality)	3
5	Sociologist/Community mobilization expert  (responsible for study of social impact of SWM and design of social mobilization activities and social safeguard measures)	4

## 7. Assignment Management

The Consultant will work under the overall supervision of the Project Coordinator, SWMTSC, who will also acts as the day-to-day contact person for the assignment. All deliverables will be reviewed by a small team composed of selected SWMTSC and TDF personnel concerned with this Project. Deliverables will also be forwarded to the World Bank Task team for their review and comments. The Consultant will be required to make regular presentations to the team on the progress and impact of the assignment.

In respect of all deliverables, SWMTSC shall, provide comments in writing; or review and approve each document on later than 15 days after receiving the document.

## 8. Service to be provided by SWMTSC

SWMTSC will provide all relevant background information, including pervious studies and reports, project documents, including project commitment paper and project operational manual as required. SWMTSC will also facilitate the consultant in obtaining relevant reports and data from municipalities, and in organization stakeholder workshops.

# ***Attachment-2***



## ***Consultative Meetings***

## **Attachment 2 Consultative Meetings**

### **Consultative meeting #1 with Lalitpur Municipality**

April 23, 2015 time 11 am- 2.30 PM

Present: Mr. Tara B Karkee, Mr. Pradip Man Amatya, Mr. Shree Bhadra Ojha, Mr. Dilli Raj shakya, Mr. Surendra Awale, Mr. Deependra Oli, Mr. Ashok Shahi, Mr. Chanakya Adhikari, Mr. Badan Nyachhyon, Mr. Yogesh Shakya, dr. rajendra Adhikari, Mr. Gehendra Geuwacharya, Mr. Ratna Meher Bajracharya

1. Lalitpur municipality informed that the Tariff rate to be charged to the Households for providing SWM services by the Municipality has been approved by the Town Council. The charge rate will be Rs. 0.50 per two thousand Sqft (annual charge of Rs 180 per year). The Total expected revenue will be about Rs. 8 million.
2. Other services: Rs 150 for Fire Safety per household will be charged per year.
3. The Tariff rates conflict with the Tariff charges collected by the Private Sector SWM service providers.
4. SIP policy requires formalizing the private sector service providers; Municipality has to develop the procedures for formalizing the private sector by registration of them.
5. LSMC has disbanded the use of Plastics and encouraged to use Paper Bags or other packing products
6. LSMC was briefed about the SIP-OBA project, which has its base on providing operational subsidy to meet the deficiency in revenue collection and expenditures of the municipality for SWM. The Subsidy will be disbursed through TDF after verification of the achievements by A Technical Verification Team and A Financial Verification Team. The project will be operated in 4 years period. The subsidy will be a multiplier based on the actual service delivery, particularly based on the collection of the revenue.
7. Next Meeting is called for April 26, 2015.

The Meeting of Aril 26, 2015 was differed because of the devastating Earthquake of Aril 26, 2015 and continued aftershocks.

## **Consultative meeting #2 with Lalitpur Municipality**

June 24, 2015 time 11 am- 12.30 PM

Present: Mr. Tara B Karkee, Mr. Pradip Man Amatya, MS. Surya Kumari Tamrakar, Mr. Prabin Shrestha, Mr. Shree Badra Ojha, Mr. Dilli Raj shakya, Mr. Surendra Awale, Mr. Prem B Thapa, Mr. Baburaja Maharjan, Mr. Ashok Shahi, Mr. Kedar Man Joshi, Mr. Badan Nyachhyon, Mr. Gehendra Geuwacharya, Mr. Janak Maharjan

1. The consultants explained that the Global Partnership for Output based Aid has appointed the World Bank as an Administrator of NEPAL SWM-OBA project and has allocated US\$ 4.3 million for use for 6 municipalities namely Tansen, Dhankuta, Pokhara, Ghorahi, Lalitpur and Leknath. The project will be implemented for a period of 4 years.
2. The project will provide subsidy to finance the gap between service delivery and revenue collection. The subsidy will be a multiple of the revenue collected with compliance with the minimum performance criteria.
3. The aims of OBA are to Provide Performance Based Service Delivery subsidy to support gradual cost recovery in parallel with service improvement.
4. The disbursement of the subsidy through verification of Technical verification of the quality of services provided and financial verification of the revenue collected.
8. Lalitpur Municipality has signed the Tripartite Agreement with SWMTSC/WB and TDF on March 30, 2015 (Chaitra 15, 2071).
9. The tripartite Agreement includes provisions SWM services as operation of Landfill site, street cleaning, Waste Collection – Segregated and non-segregated, Private Sector Participation, Preparation of strategic Planning, Situation Analysis, Development of SWM SIP, preparation of Cost model and Environmental Screening Mapping Project.
10. Lalitpur municipality informed that the Tariff rate to be charged to the Households for providing SWM services by the Municipality has been approved by the Town Council. The charge rate will be Rs. 0.50 per two thousand Sqft (annual charge of Rs 180 per year). The Total expected revenue will be about Rs. 8 million.
11. Other services: Rs 150 for Fire Safety per household will be charged per year.
12. The charges are collected along with the annual property tax. There are only 5-6000 of regular tax payers, other pay only when they have to get the help of municipality.
13. The Municipality has a SWM committee to formally overview the activities.
14. The SWM municipality will be developed in a systematic manner with focus on institutional improvements as preparation of revenue generation plan for 5 years, Development of Billing and Penalty System, Incentive System, Analysis of financial Risks, Bulk purchase plan, Planning of Human Resources, Software development for Financial Management.
15. The consultants proposed to carry out the household survey in order to complement the data gaps and suggested to focus on New Wards included in the municipality structure. There are 8 new wards attached to Lalitpur Municipality. They are Harisiddhi area – 3 wards, Dhapakhel area – 3 wards and Sunakothi area- 2 wards.

## **Consultative meeting # 3 with Private sector**

Date: Nov 25, 2015

Time 2-5 pm

Venue: SWMTSC

Present:

On behalf of SWMTSC

Er. Biswa Mani Gyawali, Executive Director, SWMTSC

Mr. Dipendra Oli, Legal Officer/Project Coordinator, SWM OBA SIP

Er. Ashok Shahi, Team Leader, PMT Consultant

On behalf of SWMTSC

Mr. Krishna Hari Gautam, Chief Executive Officer

Er. Pradeep Man Amatya, Chief, Environmental and Sanitation Division

On behalf of SWM OBA SIP consultant

Er. Badan Lal Nyachhyon

Dr. Rajendra Prasad Adhikari

Dr. Pitamber Rawal Chhetri

Agenda: Interaction with Private Sector working in Solid Waste Management in Lalitpur Municipality

1. AT the outset, Er. Pradip Man Amatya made a brief presentation on the status of Solid Waste management in Lalitpur and the role of Private Sector. The major deliberations are as follows:
  - a. Lalitpur Submunicipal City (LSMC) spends over Rs 90 million on Solid Waste Management equivalent to nearly 25% of its annual budget.
  - b. The capacity of LSMC is limited and providing SWM services in core area where as the private sector is providing services in fringe areas.
  - c. The fees collected by private sector ranges from Rs 60 to Rs 300 per household per month. The level of services provided is not uniform, standard and properly defined.
  - d. Currently, though the Solid Waste Management Act 2011 has provision of formal registration of private sector in the municipality, the process of registration has not been initiated.
  - e. A lot of problems and issues needs to be addressed jointly by the municipality and the private sector service providers jointly. Particularly, the qualitative improvement of SWM from Source segregation, collection, 3R practice, material recovery, delivery of residual waste to LFS requires joint efforts.
  - f. The role of Private Sector needs to be enhanced by extending the service level and coverage from street sweeping to practicing domestic composting, qualitative improvement checking the NPK component and effective marketing based on scientific investigation.

- g. The municipality and Private sector need to extend their services through based on PPP provisions in SWM Act through formalization of registration of PS and concluding Business contract.
  - h. The municipality requested to prepare a PPP guideline that could be followed for implementation of joint efforts of the municipality and the Private sector. It is also highlighted that the municipality could focus on Monitoring and evaluation.
2. On behalf of the OBA consultants, Dr Rajendra P. Adhikari presented the background of SWM OBA SIP project. The major points of highlights are as follows:
- a. The SWM OBA project for Nepal is based on a contract signed between the Government of Nepal and the World Bank. The World Bank is nominated as the project administrator for the OBA project by the Global Partnership for Output Based Aid. The project covers 5 municipalities namely: Batch 1 cities--Dhankuta and Tansen, Batch 2 cities Lalitpur, Pokhara, Ghorahi and Lekhnath.
  - b. The eligibility of the selected cities are:
    - i. Upfront commitment of the municipality;
    - ii. Accessibility to an existing operational and environmentally acceptable landfill
    - iii. a basic functioning SWM system in place (collection and disposal)
    - iv. an existing system for collecting solid waste charges from beneficiaries
    - v. a SWM Strategy and Action Plan, and include a shortterm four year action plan
  - c. SWM services in selected Batch 1 and Batch 2 cities in Nepal.
  - d. The SWM OBA SIP focus on following points:
    - i. The provision of a performance-based service delivery subsidy,
    - ii. Support gradual improvements in cost recovery,
    - iii. Service quality improvements over a four-year period.
  - e. The governing Indicators are as follows:
    - i. *Improved quality of services*
    - ii. *Improved financial sustainability*
  - f. Highlighted the provision of PPP in SWM Act 2011 and modalities of PPP as BT, BOT, BOOT, BTO, LOT, DOT, Joint Investment 75:25.
  - g. Major provision of SWM Act 2011:
    - i. Apply for License to provide SWM services with project profile, manpower, technology, and other descriptions
    - ii. License will be granted after evaluation of the Application
    - iii. A competitive bid will be carried out among License Holders (This is a controversy with above provisions.

Why competition is required when the license if already provided?)

There is no mention of the privilege of the Private sector or NGOs who have provided services for many years and have made large investments.

- iv. There are three types of fees to be paid by Private Sector to the Local Body :

1. The amount committed to be paid to Local Body,
  2. The proposed Contract Fee to be paid to the Local Body against Management Contract if proposed so,
  3. The Royalty agreed to be paid for use of municipal waste, treatment and reuse
- v. PPP with PS, CGO and NGO can cover only services as awareness campaign for minimisation, collect, transfer, management after closure, gardening, and beautification.

The Act has severe deficiency as such as PPP cannot be applied for Source Segregation, Household and Community Composting, operating waste collection centre, waste segregation at community level, operating MRF and Composting Plant, waste To Energy plant, operating LHS,

3. The Opinion of various PS and NGO representatives are summarized as follows:
  - a. The private sector and NGO in Lalitpur are managing over 60% of SWM generated that include collection, transfer, and disposal.
  - b. The Solid Waste Management statistics and data needs to be updated and reviewed.
  - c. Obtaining the permission for providing SWM services by PD and NGO as per ACT is OK but the Act should be clear what it is made for. It is full of controversies, inconsistencies and anomalies.
  - d. The Act needs to be reviewed and appropriate guidelines should be developed without restriction in services covered by the PS and NGO.
  - e. The Act is silent on the performance and involvement of Organisations involved before the Act is promulgated.
  - f. The PS and NGO shall be categorized based on investment and experience.
  - g. Govt or municipality involvement in SWM services shall be reduced and limited to monitoring and evaluation
  - h. In new municipalities, only PS is operating and no services provided by the municipalities
  - i. Municipality should help to strengthen the PS organizations providing services and need to agree on long term business perspective plan.
  - j. The controversy if the Act has prohibited PS and NGO to participate in the competitive bidding invited by Kirtipur municipality. The case should be thoroughly investigated so that similar episode is not repeated in Lalitpur.
  - k. New companies that will be recruited under competitive bidding will displace the existing PS organizations. If it will happen, it will be a disaster in SWM. This aspect shall be taken care and the investment made and jobs created shall be protected.
  - l. The dedication of PS and NGO for last 20 years shall be recognized by the Government and shall be given privilege in providing License to the SWM service providers.
  - m. Minimum period of recovery of the investment shall be at least 7 years (allowing 15 % depreciation of equipment. SW Facilities civil works to be depreciated in the same manner)
  - n. Lalitpur PPP model shall be developed as a role model for Nepal and a long term plan shall be prepared so that PPP model can deliver effective and sustainable services.

- o. Competition shall be limited to formal and legal organization and equal rank
  - p. Role that has been playing by the private sector and their size both should be recognized and taken into consideration.
  - q. No application was submitted by the private sector in response to the application for PPP called by Kirtipur Municipality for SWM, therefore, such facts are to be considered.
  - r. Private sector companies/NGOs should not be displaced.
  - s. Private sector is ready to work in joint venture; therefore, LSMC should create environment in which private sector partners are to be given related work in which they are currently providing services in their relevant work area and capacity.
  - t. Municipality should be able to reduce its yearly expenses related to SWM
  - u. Private sector is more capable in managing SW if they are rightly tested and enabling environment is created by the municipality.
  - v. Source segregation of waste should be implemented for which role of LSMC would be critical.
  - w. A fixed time table for providing SWm services shall be applied.
  - x. Scientific form of agreement shall be developed.
  - y. Lalitpur is a tourism destination city and plan shall be developed for SWM services to support the tourism sector.
  - z. PPP model shall be based on Zero waste Concept.
  - aa. PPP Model shall not be like a business contract.
  - bb. PS should cooperate with the municipality, pay tax and share experience.
  - cc. Opportunity for managing waste within municipal boundaries shall be created. It will reduce the operating cost drastically and increase sustainability.
  - i. Tipping cost at LFS Sisdoile is proposed to range from Rs 300 to Rs 500. It may be difficult for PS to manage.
  - dd. Compost produced by PS and NGO needs to be checked for NPK content and shall be acceptable to the users and certified. It will help to replace the artificial fertilizer and market for compost product will be secured.
  - ee. R&A of compost products are practically nil. PS and NGO need support of universities and testing laboratories including microbiological tests.
  - ff. Various form of PPP model may be needed for handling various kinds of services. This aspect needs consideration by the municipality.
4. LSMC Chief Executive Officer responded as follows:
- a. Lalitpur wants to develop as a city based on welfare governance principles and strictly follow the Law and order situation.
  - b. LSMC spends over Rs 90 million every year which is nearly 25% of its budget.
  - c. PS has very good role to play.
  - d. 8 new wards are not served by LSMC.

- e. Providing SWM services is the obligation of LSMC but in many wards the PS has provided the services.
  - f. Even after the implementation of the Act, informal organizations are still not registered and formalized. It is recommended to register at the earliest.
  - g. Currently, municipality has imposed tax at Rs 180 per annum per household and collected together with integrated tax system. There could be double taxation applied in some cases. This not acceptable.
  - h. There is a case in Lalitpur where SW transfer station is located at the side of main road. This is not acceptable.
  - i. AS per the Law, the tax collection is permitted only to the Local body or the Finance Ministry. So fees collected by PS are not permitted and is not right. We need to agree how this matter can be formally solved.
  - j. We need to define the coverage area, identify area for transfer station, develop schedule of collection, discard syndicate of PS organization,
  - k. Provide rationale of the SWM fees collected
  - l. We need to follow the Law and Regulation
  - m. LSMC will provide cooperation in all fields and extend coordination as required.
5. At the end, the Executive Director Er BM Gyawali thanked all for the extensive and fruitful interaction. He expressed vied that the feedback from the Private sector representatives will be useful for the finalization of the OBA SIP report and expressed confident that jointly the municipality and the PS organizations will be able to secure Clean Lalitpur at the end of the OBA project in next 4 years.

# ***Attachment-3***

***Additional Survey and Studies  
Required***

### Attachment 3: Additional Surveys and feasibility studies

The additional survey and investigation to be carried out for accomplishing the target of OBA SIP. They are:

- › Survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- › Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station
- › Preparation of PPP management Guideline and Establishment of PPP Unit in the municipality
- › Detailed study of Waste Management being carried out by the municipality and the Private Sector to determine the actual waste handled by each sector.
- › Preparation of Data Base of SWM Services provided to the Households and collection of revenue.
- › Updating of computerized Property Tax system with 100% household data from all 30 wards,
- › Outsourcing the SWM tariff collection to the PS service providers
- › Preparation for Outsourcing of the Waste Management Services in the core area to the Private Sector through competitive bidding and charge monthly fees in the same manner as in other non-core areas.
- › Study on application of Polluters Pay principles for disposal of waste on open space, street and nature.
- › Study on Incentives and recognition for best practitioner households, communities and wards.
- › Study on Penalty on default of service providers
- › Study on SWM Tariff at two levels: 1) SWM Tariff following the Municipality Council decision, and 2) Polluters Pay Principals following the PS SWM fee charges based on the quality and quantity delivered by the Households.
- ›

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

- › Establishing operational manual for segregation and transfer facility operations and management including MRF
- › Introduction 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
- › Design and implementation of IEC campaigns
- › Assistance in development and implementation of information and awareness campaigns for clean city and source segregation of waste
- › Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment
- › Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.
- › Establishing Data Base for recording of SWM Services provided to the Households and collection of fees for providing SWM services.

# ***Attachment-4***

***Environmental Screening***

# Social and Environmental Screening

OBA for Municipal Solid Waste Management in  
Lalitpur Sub-Metropolitan City

March 2015

Prepared Jointly by

and

**the JV of Multi Disciplinary Consultants (P) Ltd,  
Nepalconsult (P) Ltd and DA Nepal (P) Ltd**

### Social and Environmental Screening - Lalitpur Sub-Metropolitan City

Screening of social and environmental aspects of intended OBA interventions is in accordance to the ESMF guidelines and the Operations Manual. The screening is based on literature review, field study and interactions with the Municipality Staff. The basic screening is summarized as;

Concerns	Observation	OBA Eligibility/Remarks
<i>Land Acquisition</i>	<i>Not required</i>	<i>Eligible</i>
<i>EIA study</i>	<i>Not required</i>	<i>Eligible</i>
<i>Social Issues</i>	<i>Potential</i>	<i>ESMP required</i>
<i>Environmental issues</i>	<i>Potential</i>	<i>ESMP required</i>

The detailed screening has been conducted based on the Environmental and Social Management Framework (ESMF) for OBA for Municipal Solid Waste Management in Nepal. Following sections present the detailed information;

*Table 1 Assessment of Environmental Impacts*

<b>Name of the Municipality:</b>	<b>Lalitpur Sub-Metropolitan City</b>
<b>District:</b>	<b>Lalitpur</b>
<b>Activity Name/Intervention:</b>	<b>OBA for Municipal SWM</b>

The municipality is using the existing Okharpauwa landfill which is operated jointly by KMC and LSMC on 80-20 cost sharing basis. Following issues have been assessed with respect to the proposed activities;

Impacts	Assessment	Mitigation measures required
Contamination of soil, surface water and groundwater	Minor negative	Immediate clean-up of spills Drainage management Proper leachate management
Air pollution (dust and emissions from machinery, dust during soil works)	Moderate negative	Maintenance of equipment, use of good quality fuel/lubricants, sprinkling of soil, covers during soil transportation, low on-site vehicle speed, sprinkling of water
Noise from construction machinery and vehicles	Moderate negative	Construction during day hours, time limit from 6:00 am to 9:00 pm Use of silencers, low on-site vehicle speed, PPE for workers
Odor	Minor negative	Use of EM and other reagents as possible Maintenance of vehicles and machinery
Biodiversity	Negligible	-
Management of natural resources (land, water)	Negligible	Use local materials where applicable Protection of greenery

OHS concern	Moderate	OHS plan, training to workers and specific provisions e.g. medical insurance
-------------	----------	--

<b>Classification of the OBA intervention</b>	
<input type="checkbox"/> <b>Category I:</b> Activity ineligible for funding as it falls in the negative list <input type="checkbox"/> <b>Category II:</b> Activities requiring IEE or EIA. <input checked="" type="checkbox"/> <b>Category III:</b> Activities requiring simple ESMP <input type="checkbox"/> <b>Category IV:</b> Activities that do not require formal environmental assessment, nor use of code of practice, but need some monitoring and management during implementation)	
<u>Assessed/prepared by</u>  Name*: _____ Environmental Officer/Contracted Party	<u>Reviewed and corrected by</u>  Name*: _____ Department/Section Head, Municipality  Date: _____
<u>Approved by</u>  Name*: _____ Executive Officer, Municipality  Date: _____	<u>Endorsed by</u>  Name*: _____ Environment Safeguard Specialist, TDF  Date: _____

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### Assessment of Social Impacts

*Table 2 Assessment of Social Impacts*

<b>Name of the Municipality:</b>	<b>Lalitpur Sub-Metropolitan City</b>				
<b>District:</b>	<b>Lalitpur</b>				
<b>Activity Name/Intervention:</b>	<b>OBA for Municipal SWM</b>				

Probable Involuntary Resettlement Effects	Yes	No	Not known	Possible	Remarks
Will the activity include any physical construction work?	√				
Does the activity include upgrading or rehabilitation of existing physical facilities?	√				
Are any activity effects likely to cause any damage/ loss of housing, other assets, resource use?		√			
Is the site chosen for this work free from encumbrances and is in possession of the government/Municipality?	√				MRFs will be installed in respective existing places
If the site is privately owned, will this be purchased or obtained through voluntary donation?				√	
If the land parcel has to be acquired, is the actual plot size and ownership status known?			√		
Is land for material mobilization or transport for the civil work available within the existing plot/Right of Way?	√				
Are there any non-titled people living/doing business on the proposed site for civil work?		√			
Will there be loss of/damage to agricultural lands, standing crops, trees?		√			
Will there be loss of incomes and livelihoods?		√			
Will people lose access to facilities, services, or natural resources?		√			
Does the Municipality have its own laws/regulations for land acquisition?		√			Governed by Land Acquisition Act 2034
Are any vulnerable households including dalits and janjatis affected?		√			
Whether the affected land/structure owners likely to lose less than 10% of their land/structure area.		√			
If so, are these land/ structure owners willing to voluntarily donate the required land for this activity?		√			
Is any temporary impact likely?		√			

Estimates of Specific Impacts									
Components of the activity	Private land required in m <sup>2</sup>	No of landowners losing more than 10% of land area	Government land required in m <sup>2</sup>	Forest land required in m <sup>2</sup>	No of houses affected	No of shops affected	No of other structures affected	No of Squatters affected	Public utilities affected
-	-	-	-	-	-	-	-	-	-

Information on Affected Persons
Any estimate of the likely number of households that will be affected by the activity? [ <input checked="" type="checkbox"/> ] No. [ ] Yes. If yes, approximately how many? _____
No. of HHs losing <10% of their productive assets(land/cowshed/shops/economic units) : <u>Not applicable</u> _____
No. of HHs losing <10% of their productive assets(land/cowshed/shops/economic units): <u>Not applicable</u> _____
No. of HHs losing 10% or more of their productive assets?: <u>Not applicable</u> _____
Are any of them poor, female-headed households, or vulnerable to poverty risks? [ <input checked="" type="checkbox"/> ] No. [ ] Yes. If yes, please briefly describe their situation with estimated number

Project Categorization and Resettlement Planning Requirements	
<input type="checkbox"/> <b>Category A</b> , Significant impact, a full Resettlement Plan is required. <input type="checkbox"/> <b>Category B</b> , Non significant impact, a short Resettlement Plan is required. <input checked="" type="checkbox"/> <b>Category C</b> , No negative impacts, no resettlement report/plan is required.	
<u>Assessed/prepared by</u>  Name*: _____ Social Development Officer/Contracted Party  Date: _____	<u>Reviewed and corrected by</u>  Name*: _____ Department/Section Head, Municipality
<u>Approved by</u>  Name*: _____ Executive Officer, Municipality	<u>Endorsed by</u>  Name*: _____ Social Safeguard Specialist, TDF  Date: _____

### Assessment of Indigenous People and Vulnerable Groups

*Table 3 Assessment of IPs & Vulnerable Groups*

<b>Name of the Municipality:</b>	<b>Lalitpur Sub-Metropolitan City</b>
<b>District:</b>	<b>Lalitpur</b>
<b>Activity Name/Intervention:</b>	<b>OBA for Municipal SWM</b>

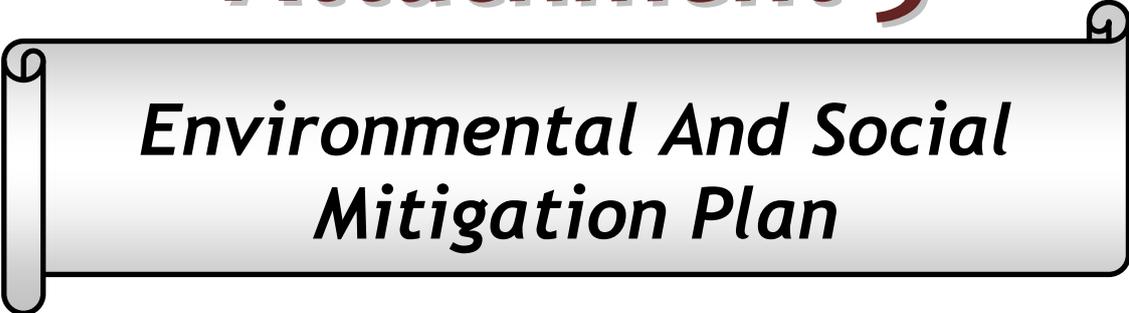
Impact on Indigenous Peoples (IPs)/Ethnic Minority(EM) /Vulnerable Group(VC)	Yes	No	Not known	Remarks or identified problems, if any
Are there dalits, janjatis, or ethnic minorities present in project locations?		√		
Do they maintain distinctive customs and traditions and economic activities in their locality?				
Will the activity in any way affect their economic and social activity and make them more vulnerable?		√		
Will the activity affect their socioeconomic and cultural integrity?		√		
Will the activity disrupt their community life?		√		
Will the activity positively affect their health, education, livelihood or social security status?		√		
Will the activity negatively affect their health, education, livelihood or social security status?		√		
Will the activity alter or undermine their local knowledge, customary behaviors or institutions?		√		
Are IP and VC households likely to lose customary rights over access to land?		√		
Are IPs and VCs likely to lose shelter/business and be displaced?		√		
In case no disruption of indigenous community life as a whole, will there be loss of housing, strip of land, crops, trees and other fixed assets owned or controlled by individual indigenous households?		√		

Estimates of Specific Impacts									
No of IP families losing land	No of VC families losing land	No of IP HH's losing house over 10% of their residence	Government land required in m <sup>2</sup>	Forest land required in m <sup>2</sup>	No of IP/VC houses affected	No of IP/VC shops affected	No of other IP/VC Structures affected	No of IP/VC Squatters affected	Public utilities affected
-	-	-	-	-	-	-	-	-	-

<b>Anticipated impacts on Indigenous Peoples/VC</b>		
Activity/Output	Anticipated positive impacts	Anticipated negative impacts
1. Increase in landfill site management activities with proper management in landfill site	- Increase in working opportunities for waste workers with better incentives	
2. Construction and operation of MRF	- Increase in employment opportunities	

<b>Decision on Categorization</b>	
<b>After reviewing the above, it is determined that the activity is:</b>	
<input type="checkbox"/> <b>Categorized A:</b> [An Indigenous Peoples Development Plan(IPDP) is required <input type="checkbox"/> <b>Categorized B:</b> Project, a specification favourable to indigenous peoples is required and addressed through a specific provision in related plans such as a Resettlement Plan, or a general Social Action Plan <input checked="" type="checkbox"/> <b>Categorized C:</b> Project, no IPDP or specific action required	
<u>Assessed/prepared by</u>  Name*: _____ Social Development Officer/Contracted Party  Date: _____	<u>Reviewed and corrected by</u>  Name*: _____ Department/Section Head, Municipality  Date: _____
<u>Approved by</u>  Name*: _____ Executive Officer, Municipality	<u>Endorsed by</u>  Name*: _____ Social Safeguard Specialist, TDF  Date: _____

# ***Attachment-5***



***Environmental And Social  
Mitigation Plan***

# Environmental and Social Management Plan (ESMP)

OBA for Municipal Waste Management in  
Lalitpur Sub-Metropolitan City

July, 2015

Prepared Jointly by  
**Lalitpur Sub-Metropolitan City**  
and  
**the JV of Multi Disciplinary Consultants (P) Ltd,  
Nepalconsult (P) Ltd and DA Nepal (P) Ltd**

## **Environmental and Social Management Plan of Activities in Lalitpur Sub-Metropolitan City (LSMC) Municipality**

### **1. Introduction**

The study on Environmental and Social Management Plan of SIP Activities in Lalitpur Sub-Metropolitan City has been conducted jointly by the Municipality and the JV of Multi Disciplinary Consultants (P) Ltd, Nepalconsult (P) Ltd and DA Nepal (P) Ltd 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 LSMC.

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

- › Collection services are provided for all households, institutions and commercials in all wards including the three new villages
- › Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas
- › Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share
- › Street sweeping in core area and at main streets and public areas in other areas
- › Improved operations practices at transfer and recovery sites
- › Plan for healthcare waste management prepared

Furthermore, the plan establishes ambitious targets for recovery of organic and recyclable fraction and waste for landfill over the planning period:

- › Recovery of organic waste to be **increased to 40% in 2018** and 90% in 2028
- › Recovery of recyclable fraction to increase from 10% in 2014 to 40% in 2018 and 100% in 2028
- › Waste for landfill to decrease from 95% in 2014 to 62.5% in 2018 and 12% in 2028

The long term strategic objectives are well in line with the National SWM policy.

The SWM Strategic Plan and Action Plan is in line with the template developed in the OBA project in 2012.

Outside the Strategic Plan, two separate developments may significantly change the basis for SWM planning in Lalitpur:

- › As of December 2014, the government has announced a municipal reform which will include 3 VDCs (38,000 inhabitants) in LSMC, with accompanying SWM service obligations (8 new wards from 3 VDCs will require SWM services).
- › The Investment Board of Nepal on behalf of GoN is conducting a tender for a PPP on SWM and energy generation in KTM Valley (three geographically defined packages that include collection, transport and processing of all municipal solid waste as well as street cleaning and river bank clean-up as well as recovery, recycling and energy generation, with all technical options being left open to the bidders).

### **3. Major Challenges**

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

- Limited collection and transportation service.
- Limited recycling and composting
- Concerns of treatment and disposal
- Further support needed to strengthen institutional set up for SWM
- Concerns of insufficient information and awareness activities
- [Formalization of Private Service Providers for SWM](#)
- Financial sustainability of system ([tariff fixation](#))

### **4. 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):

- › Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1<sup>st</sup> year - 40 Lakh each
- › Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1<sup>st</sup> year - NRP 13 Lakh each
- › Replacement of four existing worn out secondary collection vehicles, two large tipper trucks at the existing temporary transfer station in year 1 and two large tipper trucks at the new transfer station in year 2) - NRP 40 Lakh each
- › Improvements in temporary transfer station including removal of old worn out vehicle and establishment of simple material recovery facility (MRF) in year 1 - NRP 50 Lakh (SWMTSC will also support)
- › Front end loader at the temporary transfer station in year 1 - NRP 45 Lakh
- › New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh
- › Front end loader at the new transfer station in year 2 - NRP 45 Lakh
- › Loader for landfill in year 1 - NRP 80 Lakh
- › Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh
- › [Establish a construction waste management and recovery facility in year 2 - NPR 30 Lakh](#)
- › [Promote Source segregation in 15,000 household in 3 consecutive years - NPR 75 Lakh](#)
- › [Promote home composting or waste reduction from 4,000 households in 3 years - NPR 108 Lakh](#)

**Surveys and feasibility studies:**

- › Carry out a survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- › Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station

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 segregation and transfer facility operations and management including MRF
- ✓ Introduction 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
- ✓ Design and implementation of IEC campaigns
- ✓ Assistance in development and implementation of information ad awareness campaigns for clean city and source segregation of waste
- ✓ Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment
- ✓ Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.

**5. Environmental and Social Management Plan**

**5.1 Scope of Environmental and Social Management Plan:**

This scope covers potential impacts and mitigations related to activities supported under the OBA in Lalitpur Sub-Metropolitan City and the activities/ aspects directly linked to the OBA support.

**5.2 Objectives of ESMP:**

The basic objectives of the ESMP 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.

## 6. 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 Lalitpur Sub-Metropolitan City;

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	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	<ul style="list-style-type: none"> <li>1 tractor, 12 tippers, 2 dumper placers and 4 secondary vehicles in operation; and 6 trucks, 1 mini-truck, 12 tractors and 4 trailers operated by private sectors</li> <li>Major concerns of vehicular emission does exist but increased number of vehicular movement may increase the emission</li> </ul>	<ul style="list-style-type: none"> <li>Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle to replace existing random schedule</li> <li>Proper information dissemination</li> <li>Door to door collection and transport to be done early morning (5:30-9:30 AM)</li> <li>Grievance Redress Mechanism will be in function</li> </ul>	As per SIP intervention, 10 waste collection compactor vehicles, 4 small tractors/trailers and 2 large tippers - NPR 61,200,000	<ul style="list-style-type: none"> <li>Municipality for collection schedule &amp; Route</li> <li>Collection sites</li> </ul>	<ul style="list-style-type: none"> <li>Extended collection target for existing wards planned for 4 years, and for 3 new VDCs started in the Year II</li> <li>10 compactor vehicles and 4 new small collection vehicles in Year I</li> <li>Replacement of 4 existing secondary vehicles and 2 large tippers at temporary transfer station in Year I</li> <li>2 large tipper trucks at the new transfer station in Year II</li> </ul>	Environment and Sanitation Section in partnership with TLOs for preparation of routes and schedules  Environment and Sanitation Section for collection operation and monitoring
	Spillage of waste from collection vehicles during collection and	<ul style="list-style-type: none"> <li>Spillage during HH collection</li> <li>Transportation without or inappropriate covering in the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>Avoid rough handling during Household (HH) collection</li> <li>Avoid overfilling of the</li> </ul>		Collection sites	Regularly during collection and transportation	Environment and Sanitation Section - LSMC

*Environmental and Social Management Plan (ESMP)  
OBA for Municipal SWM in Lalitpur Sub-Metropolitan City*

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
	transportation causing littering of waste in the streets and in the nature		<ul style="list-style-type: none"> <li>vehicle during collection</li> <li>– Cover the waste during transportation to avoid windblown litter</li> <li>– Inform households and other users about the waste collection system and the collection scheme.</li> <li>– Encourage households and other users to dispose waste at designated times</li> </ul>		<ul style="list-style-type: none"> <li>Transportation Routes</li> <li>Landfill site</li> </ul>		Private operators
	Health impacts on workers	<ul style="list-style-type: none"> <li>– Risk &amp; hazard for informal waste collectors</li> <li>– No any occupational health &amp; safety plan exists (Limited Personal Protective Equipment (PPE),</li> <li>– Reluctance to use PPE, No provision for regular health checkup)</li> </ul>	<ul style="list-style-type: none"> <li>– Identification of potential risks &amp; hazards</li> <li>– Preparation of Occupational Health &amp; safety plan (Train workers at all working fronts, Provide them with all necessary PPE, Regular health check-up, Prompt medical attention for any hazards etc)</li> <li>– Pre-screening of health of swm workers</li> <li>– Health Insurance for waste workers</li> <li>– Make use of small operating faceso that risks are minimum</li> </ul>	<ul style="list-style-type: none"> <li>NPR 500,000 for preparation of OHS Plan</li> <li>PPEs -NPR 2,800,000</li> <li>NPR 500,000 for trainings</li> </ul>	<ul style="list-style-type: none"> <li>Reported cases in municipality (Environment Section)</li> <li>Monitoring the waste handlers during collection and treatment</li> <li>Collection centers, transfer stations operated by private operators</li> </ul>	<ul style="list-style-type: none"> <li>Year I onwards for Occupational Health &amp; Safety Plan Preparation</li> <li>1 set of PPEs per waste worker per year (for 4 years)</li> <li>Trainings in each year</li> </ul>	<ul style="list-style-type: none"> <li>Environment and Sanitation Section in LSMC</li> <li>Private operators</li> </ul>

*Environmental and Social Management Plan (ESMP)  
OBA for Municipal SWM in Lalitpur Sub-Metropolitan City*

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
	Increased amount of waste to the landfill causing increased adverse environmental and social impacts to the environment around the landfill.	<ul style="list-style-type: none"> <li>– Limited segregation at HH level</li> <li>– Limited and unmanaged separation of recyclables and reusable at the landfill</li> <li>– No any significant community issue observed</li> </ul>	<ul style="list-style-type: none"> <li>– Intensely promote segregation at the source and HH level composting</li> <li>– Production of sellable recycle materials</li> <li>– Proper management of landfill site according to operation manual</li> <li>– Optimal use of cover soil</li> </ul>		Landfill Site and its surrounding areas		Environment and Sanitation Section (Section Chief/Supervisor) in support of municipal engineer
Introduction of composting system at household level	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"> <li>– Limited HH level composting</li> </ul>	<ul style="list-style-type: none"> <li>– Compost management training (<i>GESI sensitive approach</i>)</li> <li>– Regular monitoring system for proper handling of HH composting</li> <li>– Garden or Roof top composting facilities, vermi-compost for example as appropriate</li> </ul>	4,000 bins for home composting – NPR 108 Lakh Compost Training (Follow up 250 participants) NRS. 200,000 For Social Mobilizers: NPR 200,000	Municipal records	Year I and onwards	Environment Section and Sanitation Section for training management and regular monitoring at community level in support of TLOs
	Possibility of nuisance due to improper handling Spread of bad smell during the process of composting, Leachate	<ul style="list-style-type: none"> <li>– HHs started HH level composting are reluctant to continue because of the nuisance caused by improper handling</li> </ul>	<ul style="list-style-type: none"> <li>– Use of EM to reduce odour</li> <li>– Training on EM production/promotion</li> <li>– Regular Monitoring (through a social mobilizer - at least for 1 year)</li> </ul>		Municipal records	Year I onwards	

*Environmental and Social Management Plan (ESMP)*  
*OBA for Municipal SWM in Lalitpur Sub-Metropolitan City*

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
Source segregation and collection of segregated waste	Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing emission and traffic problems	<ul style="list-style-type: none"> <li>- Segregation already initiated</li> <li>- No provision for separate collection</li> </ul>	<ul style="list-style-type: none"> <li>- Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle</li> <li>- Early morning Door to door collection at core urban area.</li> <li>- Awareness campaign on Source Segregation of solid waste in HH/community level</li> <li>- Reward mechanism for those who do segregation at HH (subsidization of tariff etc.)</li> </ul>	Cost of segregation campaigns and provisions: 5,000,000	Collection Schedules/Routes prepared by Municipality  Collection Points  HH level monitoring	Year I and onwards	Environment and Sanitation Section in partnership with TLOs
	Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route	<ul style="list-style-type: none"> <li>- Segregation already initiated</li> <li>- No provision for separate collection</li> </ul>	<ul style="list-style-type: none"> <li>- Use of well-planned schedule considering the volume of waste reducing unnecessary movement of vehicle.</li> <li>- Early morning Door to door collection at core urban area</li> <li>- Avoid overfilling of the vehicle during collection</li> <li>- Cover the waste during transportation</li> <li>- Use of microbial formulations for smell problem in transportation</li> </ul>	No significant additional cost	Municipality  Collection Points  HH level monitoring	Year I and onwards	Environment and Sanitation Section in partnership with TLOs

*Environmental and Social Management Plan (ESMP)  
OBA for Municipal SWM in Lalitpur Sub-Metropolitan City*

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
Establish a construction waste management and recovery facility	Increase in vehicular use for separate collection and during processing of the construction waste, and health concerns of workers	<ul style="list-style-type: none"> <li>- Mixed during collection of MSW</li> <li>- So mixed disposal</li> <li>- Some private parties have started construction waste management/recovery works</li> </ul>	<ul style="list-style-type: none"> <li>- Separate collection of construction wastes</li> <li>- Operational Manual to be developed for construction waste management and recovery center</li> <li>- Proper area demarcation, fencing and management</li> <li>- Special provisions to reduce noise and dust nuisance</li> <li>- PPEs and medical facilities to workers in the recovery center</li> </ul>	NPR 30 Lakh	<p>The construction waste management and recovery center</p> <p>Surrounding environment (feedback from local communities)</p> <p>During construction and operation phases</p>	In year II	Environment and Sanitation Section and Private partnership is potential
Improvement in temporary transfer station	<ul style="list-style-type: none"> <li>- Possibility of nuisance in community due to improper waste handling (Spread of bad smell during the process of segregation at disposal and final disposal itself, Leachate spillage &amp; percolation)</li> <li>- Increase in vector &amp; flies causing</li> </ul>	<ul style="list-style-type: none"> <li>- Gradually improvement is ongoing at the temporary transfer station</li> </ul>	<ul style="list-style-type: none"> <li>- Development of an operation manual for temporary transfer station</li> <li>- Training the workers in safer waste handling practices</li> <li>- Improvements in existing components/system</li> <li>- Replacement of worn out old vehicles</li> <li>- Inbuilt small MRF in the temporary transfer station</li> </ul>	NPR 5,000,000 for improvement in temporary transfer station	<p>Municipal records, field visit</p> <p>Records from MRF in the temporary transfer station</p>	Year I onwards	Environment Section and Landfill Section/ LSMC

*Environmental and Social Management Plan (ESMP)  
OBA for Municipal SWM in Lalitpur Sub-Metropolitan City*

OBA Interventions	Potential Risks	Existing Condition	Potential Mitigation Measures	Budget	Verification Source/Location to Monitor	Implementation Schedule	Responsibility
	<ul style="list-style-type: none"> <li>public health hazards</li> <li>- Leachate can damage nearby land and nearby water bodies</li> </ul>						
Construction of new transfer station with MRF	<ul style="list-style-type: none"> <li>- Safety concerns</li> <li>- Noise and dust</li> <li>- Nuisance to surrounding environments</li> </ul>	<ul style="list-style-type: none"> <li>- No separate transfer station</li> <li>- No separate MRF</li> <li>- Using combined facility with KMC</li> </ul>	<ul style="list-style-type: none"> <li>- Proper area allocation for transfer station and proper fencing/demarcation</li> <li>- Maintaining of greenery</li> <li>- Control over spreading of segregated waste, and residue</li> <li>- Safety measures will be specifically developed for transfer station and its MRF</li> </ul>	NPR: 30,000,000 for transfer station and a MRF within the transfer station	<ul style="list-style-type: none"> <li>Municipality's progress reports</li> <li>Supervision and monitoring reports</li> </ul>	Year II onwards	<ul style="list-style-type: none"> <li>Environment and Sanitation Section</li> <li>Lalitpur Sub-Metropolitan City</li> </ul>
	<ul style="list-style-type: none"> <li>- Pollution of nearby water bodies</li> </ul>		<ul style="list-style-type: none"> <li>- Provisions of PPEs, specific guidelines to work within new transfer station and its MRF</li> </ul>				
	<ul style="list-style-type: none"> <li>- Concerns of OHS for construction workers</li> </ul>						

**Notes:**

**Note 1:**

*The site for transfer station and the details of MRF have not been available. So based on the detail design and components, specific Environmental Management Plan (EMP) should be prepared by LSMC. Land pollution, air pollution, water pollution, noise nuisance, and aesthetic indicators need to be considered along with other concerns.*

**Note 2:**

*Year I will mean FY 2072/73, and successive years will be successive FYs accordingly.*

**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.				
Promotion of HH composting	Improper composting causing spread of unwanted residue in garden and orchard Spread of foul order due to improper HH composting				
Source Segregation and Collection of segregated waste from households	Increase in vehicular use for separate collection of biodegradable and non-degradable waste causing				

in service areas	emission and traffic problems				
	Collection and transport of biodegradable waste in open vehicle causing spread of bad smell all along the route				
	Because of use of certain area as transfer site, there will be land, water, air and visual pollution				
	Health hazard among the workers				
Establish a construction waste management and recovery facility	Environmental Pollution, noise nuisance Workers' health concerns				
Improvement in existing temporary transfer station with a small MRF	<ul style="list-style-type: none"> <li>- 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 &amp; percolation)</li> <li>- Increase in vector &amp; flies causing public health hazards</li> <li>- Leachate can damage nearby water/land</li> </ul>				
Construction of new transfer station with a MRF	<ul style="list-style-type: none"> <li>- Safety concerns for construction workers involved in construction of new transfer station and a MRF</li> <li>- Problems of noise and dust</li> <li>- Pollution of nearby water bodies</li> <li>- OHS concerns need to be observed</li> </ul>				

# ***Attachment-6***



## **Attachment 6: Household Survey Reporting Format**

### **I. Introduction**

#### **1.1 General**

This is the Inception Report of Consulting Services on Solid Waste Management Service Improvement Plans (SWM-SIPs). This Inception Report is submitted by Multi/ DA Nepal/ Nepal Consult JV (herein after referred as the 'consultant') as part of 'Terms of the Contract Agreement' signed with Solid Waste Resource Management Centre (herein after referred as client).

The Report contains an Introduction, Inception Activities and Future Course of Action and Annexes to complete the assignment. Agreement for the assignment was signed on [REDACTED] and work commenced with an introductory consultative meeting between the client and consultants at the client office.

#### **1.2 Project Appreciation**

##### **1.2.1 Background**

The World Bank, acting as administrator for the Global Partnership on Output-Based Aid (GPOBA), has approved a grant of US \$4.3 million to the Government of Nepal to implement the Project 'Output Based Aid (OBA) for Municipal Solid Waste Management' (hereinafter referred to as the 'OBA Project'). The grant finances service delivery subsidies for selected participating municipalities, over a four (4) year period, to cover the gap between the costs of delivering solid SWM service and the beneficiary revenues collected through SWM fees, provided that the services meet verified minimum performance criteria. Subsidies will be paid to municipalities based on agreed multiples of verified beneficiary revenue collected upon the services' meeting per-agreed minimum performance criteria.

The project aims to improve access to high quality and financially sustainable SWM services in Participating Municipalities through the provision of a performance based service delivery subsidy ( the OBA Subsidy) to support gradual improvements in cost recovery in parallel with service quality improvement over a four-year period. The disbursement of the OBA Subsidy will be subject to two separate independent verifications: (i) a technical verification to confirm the quality of SWM services provided; and (ii) a financial verification to confirm the level of beneficiary revenues collected (the basis for calculation of the OBA Subsidy).

The project initially targets six municipalities (Tansen, Dhankuta, Lalitpur, Lekhnath, Pokhara and Ghorahi) and benefits an estimated total 800,000 people. The Solid Waste Management Technical Support (SWMTSC) and the Town Development Fund (TDF) are jointly providing technical and project management support to the Participating Municipalities to implement the activities covered by the output-based aid (OBA) grant. In accordance with the grant agreement, SWMTSC and TDF signed a Memorandum of Understanding (MoU) which lays out the responsibilities of each agency under the project. Participating Municipalities will each sign Tripartite Project Implementation Agreements (TPIA) with TDF and SWMTSC as a basic for participation in the project.

##### **1.2.2 Solid Waste Management Service Improvement Plans (SWM-SIPs)**

The Project requires Participating Municipalities to (i) prepare SWM-SIPs identifying those service delivery improvements to be covered under the project; (ii) decide on the service delivery model; (iii) implement service delivery improvements as per agreed plans; and (iv) implement a designated SWM fee charged to all waste generators, and collect the revenues.

The SWM-SIP is central to project implementation at the municipality level as it defines the service improvement strategy and targets under the OBA project which feeds into both the subsidy determination and the performance scorecard for each municipality. The SWM-SIP fits within the long-term strategy for the municipality.

SWMTSC has major role to provide technical support to participating municipalities under the project, including support in preparing SWM-SIPs. In this regard, SWMTSC intends to hire consulting services to prepare SWM-SIPs in four municipalities (Lalitpur, Pokhara, Lekhnath and Ghorahi) which constitute the second batch of municipalities to participate in the Project. These four municipalities have already prepared their long-term strategic plan for SWM, with the support of SWMTSC. What they need now is a short-term action plan (SWM-SIP) to translate the strategy into a set of actions and initiatives aimed at improving the quality and financial sustainability of SWM services.

### 1.2.3 Objective of Household Survey

The primary objective of household survey was to understand current practices followed by households in solid waste management. The objectives of household survey were:

- a) Baseline Information on Solid Waste Generation
- b) Current Practices of Solid Waste Management
- c) Current Facilities available for Solid Waste Collection
- d) Practices of Segregation of Solid Waste in Households
- e) Area of improvement in the solid waste management
- f) Willingness to pay for Solid Waste Management

## II. Methodology

This study adopted a cross-sectional design and utilized both qualitative and quantitative methods of data collection as they complement each other. It predominantly utilized primary data sources, however, where available secondary data sources were reviewed to complement it. Specifically, structured survey interviews, focus group discussions and key informant interviews were applied while collecting both types of data/information.

### 2.1 Sampling Method

Population of each municipality was not same characteristic in many ways like, income, geographical setting, percentage of waste release etc., hence, sample size of each municipality was determined by using the formula given by Krejcie and Morgan (1970).

$$n = \frac{X^2 NP (1 - P)}{d^2(N - 1) + X^2 P (1 - P)}$$

Where, n= estimated sample size, N= total number of targeted beneficiaries covered by project and d= degree of accuracy (express as proportion), P= population proportion (assumed to be 0.5),  $X^2$  =table value of Chi-square@ d.f. =1 for desire confidence level.

Here,

N= 4000

d= 5%

P= 0.5

$X^2$ = 3.841

Individual and commercial households were selected to carry out sample survey. First, the population of each municipality was listed to determine the sampling household by using aforementioned sampling method. Sample size was distributed according the proportion of population distribution in each ward of the respective municipality.

Of the total sample, individual household survey was carried out in 80% household of each municipality. Field supervisors and enumerators prepared list of households and settlement in consultation with ward offices of each municipality. The sample household were selected randomly from the list. In addition, maximum number of settlements/Tole were considered while conducting survey.

Approximately, 20 percent of commercial households were selected from core city areas of each municipality. Representation of all commercial institutions like hotel, grocery/shop, education institution, government and private offices were taken during the survey tenure. The following table reveals the planned and actual sample taken during the survey period.

**Table: 2.1 Summary of Sample size planned and achieved**

Municipality	Total HH size	Planned		Actual	
		individual	Commercial	individual	Commercial
Lalitpur	82870	348	34	334	53
Pokhara	82870	332	52	334	53
Lekhnath	<b>17405</b>	351	34	349	36
Ghorahi	15485	319	56	323	56
Total	198630	1350	176	1340	198

Altogether, 1538 survey form completed of which individual and commercial were 1340 and 198 respectively. All wards were covered during the survey for individual and only core city wards were chosen for commercial survey. The surveyed team was tried to reach the listed household first, in the case of their unavailability, additional sample was taken the case of their absence, to maintain the actual sample size and minimize the non-response rates.

## 2.2 Field training and mobilization

A total of Four study team consisting of Team Leader, researchers, supervisors and enumerators were mobilized to carry out the field study. Considering the nature of assignment the consultant firm deputed additional experts and statisticians with aiming to maintain quality of works. The experts were engaged for enumerator's trainings at municipal level, field test of questionnaires and collection of second hand information from respective survey areas. They were heavily engaged in back check and technical backstopping of the works of enumerators. Altogether, 25 enumerators and 4 supervisors were mobilized in the respective field areas.

## 2.3 Data Collection tools and techniques

### 2.3.1 Desk study

The survey team collected and arranged reports, studies, acts, regulations, policies, approaches, modalities, guidelines and other documentation related to study and from respective municipality. The report, information, guidelines and relevant literatures was reviewed thoroughly by the Team Leader and other experts. Based on this survey questionnaires and methodology was finalized for the survey. In respect to this, list of contents was finalize and shared with client.

The broad scope and task carried during the desk study phase was;

- Collection of secondary information, documents, guidelines, reports related to solid waste management
- Review of the relevant reports, guidelines and other relevant documents, progress report
- Assessment and evaluation of secondary information;
- Literature review;
- Identification of key informants;
- Identification of key stakeholders including Service Providers
- Preparation of field study methodology
- Development of tools, questionnaire and checklist for the data collection
- Preparation of work plan for the field study survey methodology; and
- Preparation of inception report
-

### 2.3.2 Structured interview

Two separate sets of questionnaires for individual and commercial household survey was developed at the inception phase and presented to the client. Feedback received from clients was incorporated before finalization of the questionnaires. The final structure questionnaires was administered for field data/information collection. Under the household level, data/information regarding the volume of waste, management practices, methods, current fees, collection practices were collected from the field survey. Moreover, waste handling, segregation, collection fees, management practices if any and their willingness to pay for improved services were focused at commercial level.

### 2.3.3 Key Informant Interview

The study team conducted intensive interviews with local service providers, concerned municipal officials, who had direct knowledge and important information about current management practices. New ideas and perspectives of stakeholders was collected from this survey. The study team examined the information in detail to check whether it was biased or not by the views of respondents and interviewees.

### 2.3.4 Data analysis and interpretation

Following field data collection, the questionnaires from the structured interviews with the samples of individual and commercial survey form were first cleaned and the open - ended responses coded. Data were then entered into the computer using the STATA. Logical checks and frequency runs were made on all variables to further enhance the accuracy and identify any outliers before actual data analysis. Statistical test such as; t-test was performed on some variables of interest to examine the associations based on p-values. Statistical significance was considered when the p-value was below or equal to 0.05. Frequency tables and descriptive statistics have been used in the presentation of the findings. On the other hand, the qualitative data mainly from semi-structure interviews and key informant interviews were assembled and typed into a word processing program. This was done manually and analyzed using content and thematic approaches and it involved classifying responses into meaningful categories so as to bring out their essential pattern. The codes were carefully developed to ensure that they were mutually exclusive, exhaustive and representative.

**Table No. 2.2 Sample size covered for individual and commercial household in Lalitpur sub-metro city**

Ward no.	Sample HH size	Prop of wardwise population	Planned		Actual	
			Sample size distribution	Commercial	Sample size distribution	Commercial
1	2221	0.04	13		14	1
2	4839	0.08	29		29	0
3	3528	0.06	21		20	0
4	3913	0.06	24		24	0
5	1516	0.02	9		9	0
6	1563	0.02	9	2	8	2
7	1839	0.03	11	2	9	2
8	2816	0.04	17	3	14	4
9	3484	0.06	21	4	17	4
10	1729	0.03	11	2	10	2
11	1010	0.02	6	1	5	1
12	1342	0.02	8	2	9	2
13	3772	0.06	23		23	0
14	5438	0.09	33		33	0
15	3480	0.06	21		22	0
16	858	0.01	5	1	4	1
17	2678	0.04	16	3	12	2
18	1200	0.02	7	1	6	2
19	1774	0.03	11	2	9	2
20	1978	0.03	12	2	10	3

Ward no.	Sample HH size	Prop of wardwise population	Planned		Actual	
			Sample size distribution	Commercial	Sample size distribution	Commercial
21	1143	0.02	7	1	6	1
22	2460	0.04	15	3	12	2
23	1854	0.03	11	2	10	2
24	571	0.01	3		4	0
25	753	0.01	5		4	0
26	767	0.01	5		5	0
27	1630	0.03	10		11	0
28	756	0.01	5		4	0
29	1080	0.02	7		7	0
30	901	0.01	5		5	0
	62893	1.00	382	34	355	33

### III. Result and discussion

#### 3.1 Baseline Information on Solid Waste Generation

##### 3.1.1 Population

According to 2011 census, the total population of the project area was **????** with 62,893 households. The average household size was **????**. The following table shows the population details of the project area:

**Table 3.1: Household and Population of Lalitpur Sub-metropolitan City**

Ward No.	Households	Total population	Male	Female
1	2,221	8,660	4,835	3,825
2	4,839	19,573	10,747	8,825
3	3,528	14,460	7,582	6,878
4	3,913	15,779	7,857	7,923
5	1,516	6,576	3,267	3,309
6	1,563	6,962	3,601	3,361
7	1,839	8,060	4,224	3,836
8	2,816	11,706	6,175	5,531
9	3,484	14,281	7,654	6,627
10	1,729	6,730	3,636	3,094
11	1,010	4,578	2,319	2,259
12	1,342	6,049	3,176	2,873
13	3,772	15,266	7,670	7,596
14	5,438	21,802	10,902	10,900
15	3,480	14,230	7,254	6,976
16	858	4,479	2,235	2,244
17	2,678	10,930	5,754	5,176
18	1,200	5,932	2,955	2,977
19	1,774	7,583	3,917	3,666
20	1,978	7,928	4,102	3,826
21	1,143	4,784	2,471	2,313
22	2,460	10,380	5,600	4,780
23	1,854	7,002	3,645	3,357
24	571	2,424	1,206	1,218
25	753	3,252	1,584	1,668
26	1,377	5,813	2,834	2,979
27	1,020	4,279	2,128	2,151
28	756	2,872	1,432	1,440
29	1,070	4,159	2,063	2,096
30	911	3,705	1,883	1,822
Total	62,893	254,308	130,556	123,752

## 3.2 Current Practices of Solid Waste Management

### 3.2.1 Daily Waste Generation from Households

According to household survey, 2015, the average waste generation in Lalitpur Sub-Metropolitan is 1.19 kg per household per day. Where total 74222.83 kg waste is generated in a day.

Ward No. 19 has highest waste generation while ward no. 7 has lowest waste generation per day.

Ward wise number of household and waste generation are given below in a table:

**Table 3.1: Ward wise number of household and waste generation**

Ward no.	Number of HH	Waste Generation in Kg/day		Remark
		Per HH	Total	
1	2221	1.57	3490.14	
2	4839	1.39	6732.88	
3	3528	1.17	4110.12	
4	3913	1.27	4972.77	
5	1516	1.20	1819.20	
6	1563	1.26	1973.29	Core Area
7	1839	0.56	1021.67	Core Area
8	2816	1.13	3178.06	Core Area
9	3484	0.74	2584.31	Core Area
10	1729	0.65	1123.85	Core Area
11	1010	0.94	949.40	Core Area
12	1342	1.67	2236.67	Core Area
13	3772	1.03	3895.00	
14	5438	1.12	6113.63	
15	3480	1.73	6010.91	
16	858	1.13	965.25	Core Area
17	2678	1.09	2923.48	Core Area
18	1200	0.70	840.00	Core Area
19	1774	2.50	4435.00	Core Area
20	1978	0.72	1424.16	Core Area
21	1143	1.25	1430.66	Core Area
22	2460	0.96	2357.50	Core Area
23	1854	0.83	1538.82	Core Area
24	571	1.38	785.13	
25	753	1.38	1035.38	
26	767	2.20	1687.40	
27	1630	1.09	1778.18	
28	756	1.25	945.00	
29	1080	1.14	1234.29	
30	901	0.70	630.70	
<b>Total</b>	<b>62893</b>	<b>1.19</b>	<b>74222.83</b>	

### 3.2.3 Management of Waste Generation from Households

52.12% of households have facilities of door to door collection while waste is used for animal feeding as minimum as 5.28%. Waster pickers are contributing to 45.07% households in waste management.

Table No. 3.2: Waste Management Practice

Waste Management Practice	%
door to door	52.12
temporary collection center	6.25
open space	8.45
burn	15.61
own field	16.00
composting	26.36
waste picker	45.07
animal feed	5.28
others	61.90

Among the respondents who are disposing the waste in open space stated lack of collection facilities as major reason for same. The details are express below

Table No. 3.3: causes of waste disposal in open spaces

	%
existing practices	36.00
no collection facilities at all	40.00
no collection facilities at our tole	8.00
irregular collection	8.00
others	8.00
total	100.00

Most of households are disposing waste in open spaces as 40% of households reported that no facilities of collection while 36% are practicing before

Table No. 3.4: Times of waste disposal

Times of waste disposal	%
immediately	31.92
onetime each day	20.62
2-3 times/week	32.20
weekely	15.25
Total	100.00

32.20% of households are disposing waste in 2-3 times in a week while 31.92% of households are disposing it immediately.

Table No. 3.5: Waste collection within house

Waste collection within house	%
Kitchen	29.33
store room	1.11
Compound	50.44
Others	19.11
Total	100.00

50% of households are collecting waste in compounds while 29.33% in the Kitchen.

**Table No. 3.6: Types of waste handling materials**

waste handling materials	%
Plastic sacks	40.22
Paper bags	3.47
Rice bags	19.72
bucket/tin/plastics	35.80
Others	0.79
Total	100.00

40.22% of households are storing the wastes in plastic sacks while 35.80% of households are storing in bucket/tin/ plastics

### 3.3 Current Facilities available for Solid Waste Collection

**Table No. 3.7: Waste collection facilities**

Waste collection facilities	%
Yes	92.39
No	7.61
Total	100.00

92.39% of households have access to certain facilities for waste collection

**Table No. 3.8: Utilization status**

Utilization status	%
Yes	90.24
No	9.76
Total	100.00

90.24% of households are utilising facilities for waste collection

**Table No. 3.9: Ways to collect waste from hhs**

Ways to collect waste from hhs	%
waste collectors at hhs	41.49
disposal at temporary collection center	10.64
upload in vehicle	41.49
dump at open spaces	6.17
don't know	0.00
others	0.21
Total	100.00

41.49% of households has facilities of collection in household and 41.49% of households has to upload waste to collecting vehicles.

**Table No. 3.10: Service providers**

Service providers	%
Municipality	46.96
Private/NGO/CBO	47.97
Don't know	5.07
Total	100.00

Most of households are utilising services provided by Municipality and Private NGO/ CBOs

**Table No. 3.11: Collection times**

Collection times	%
Daily	10.14
Alternative day	20.27
once a week	15.88
twice a week	25.68
irregular	26.01
others	2.03
Total	100.00

25.68% of households have got facilities of collection of waste twice a week while 26.01% of households are facing irregularities in the collection.

**Table No. 3.12: Timeline to collect waste**

Timeline to collect waste	%
Morning	72.30
Evening	0.00
Day	4.39
Night	0.00
Irregular	23.31
Total	100.00

72.30% of households are receiving collection of waste in the morning time.

**Table No. 3.13: Payment status about the services**

Payment status	%
Yes	53.72
No	46.28
Total	100.00

53.72% of households are paying for the service for waste collection and road sweeping they are receiving

**Table No. 3.14: Toll tax details (NRs)**

For Waste Collection Facility			For Road Sweeping Facility			For Both Facility		
Mean	Minimum	Maximum	Mean	Minimum	Maximum	Mean	Minimum	Maximum
241	100	350	154	75	300	207	100	400

In average Rs. 241 is paid for waste collection, Rs. 154 for road sweeping and Rs. 207 for both facilities.

**Table No. 3.15: Willingness to receive services**

Willingness to receive services	%
Yes	81.48
No	18.52
Total	100.00

81.48% of households which are not receiving any facilities for collection of wastes; are interested to receive the facility.

### 3.4 Practices of Segregation of Solid Waste in Households

**Table No. 3.16: Segregation of waste**

Segregation of waste	%
Yes	76.62
No	23.38
Total	100.00

76.62% of households are practicing waste segregation.

**Table No. 3.17: Segregation categories**

Segregation categories	%
Two types	80.51
Three types	18.38
More than three	1.10
Total	100.00

80.51% of household are segregating the waste into two types- degradable and non degradable while 18.38% are segregating the waste into three types- degradable, recyclable and re-usable

**Table No. 3.18: Selling practices of waste to waste workers**

Selling practices	%
Yes	80.00
No	20.00
Total	100.00

80% of household are selling waste to waste workers

**Table No. 3.19: Types of waste materials sold**

Types of waste materials sold	%
Glass	73.94
Paper	91.20
Cloth	1.76
Skin	0.70
Iron	84.15
Rubber	8.45
Kitchen garbage	2.11
wood	0.70
Plastic	53.87
Others	7.75
Total HH who sale waste to waste worker	100.00

Majority of households are selling glass, paper, iron, plastics to the waste workers

**Table No. 3.20: Monthly income from waste at hhs**

Monthly income from waste sales, NPR	%
below 25	57.75
25-50	29.23
50-100	10.21
More than 100	2.82
No	0.00
Total	100.00

57.75% of household are incoming less than Rs. 25 per month by selling waste.

**Table No. 3.21: Participation in awareness raising activities**

Participation	%
Yes	14.20
No	85.80
Total	100.00

Majority of Household are not participated in awareness raising activities.

**Table No. 3.22: Usage of compost bin**

Usage of compost bin	%
Yes	9.01
No	90.99
Total	100.00

Majority of households are not using compost bin.

**Table No. 3.23: Monthly income**

Monthly income	%
below 5000	4.51
5-10000	26.48
11-20000	32.68
morethan 20	36.34
Total	100.00

36.34% of households per month income is more than 20,000 while 32.26% of household is from 11,000 to 20,000

### 3.5 Area of improvement in the solid waste management

Respondents have suggested various option for improvement of the services. Most of respondents have suggested following ones.

- Additional facilities of road cleaning
- Street dog control
- Sanitation facilities
- Awareness training to public
- Improvement in behaviour of waste picker
- Provide biogas and biomas production support
- Collect waste from all houses and areas
- Collection of waste according to types

- Provide compost and dust bin to houses
- Provide containers facilities in public places
- Good coordination with CBOs, others
- Waste has to be handled safely and transport safely
- Improve waste management practices by municipality
- Maintain rule and legal action
- Increase involvement of municipality in waste collection
- Proper handling of collected waste while collecting
- Regular collection
- Proper separation and segregation of waste
- Develop sewerage management infrastructure and clean regularly
- Provide skill training for composting and segregation
- Develop skill manpower in municipality
- Provide temporary collection center
- Develop toll tax policies
- Provide training for waste picker
- Provide vehicle service with signal during collection

### 3.6 Willingness to pay for Solid Waste Management

**Table No. 3.24: Willingness to pay**

mean	sd	min	max
154.27	104.34	10	500

In average households are willing to pay Rs. 154.27 per month for the waste collection. The amount is lower than what they are paying now. Greater number of respondents have shown willingness to pay in the range of Rs. 50 to Rs. 200 however very few (3.8%) have shown willingness to pay as high as Rs. 300 to Rs. 500 per month.

**Table No. 3.25: Willingness to pay categorically**

SN	Willingness to pay in Category (NPR)	lalit HH	%
1	50<	73	23.0%
2	50-100	91	28.6%
3	100-200	80	25.2%
4	200-300	62	19.5%
5	300-500	12	3.8%
	<b>Total</b>	<b>318</b>	<b>100.0%</b>

Looking at service providers capacity and quality of service, respondents have indicated willingness to pay upto high of Rs. 268 per month. Details are provided as following

**Table No. 3.25: Willingness to pay as per service provider**

SN	Service providers	%	Amount NPR
1	CEP	2.2%	150.00
2	Fulbari	0.7%	100.00
3	Jupital tole sudhar samiti	2.2%	200.00
4	Macha raja Nepali	2.2%	75.00
5	Multi purpose research and Namuna	2.2%	200.00
6	NEDEC	3.7%	268.75
7	NEPSEMAC	35.8%	200.00
8	NGO	0.7%	200.00
9	Nepal Bikas Aviyan	6.7%	116.67
10	Sirjansil Batabaran Sanrachan kendra	13.4%	175.00

SN	Service providers	%	Amount NPR
11	WEPCO	11.2%	191.25
12	WIED	5.2%	171.43
13	creative environment kendra	0.7%	150.00
14	janachetana fohar maila byawasthapan samuha	0.7%	300.00
15	srijansil batabaran samrakchyan kendra	3.7%	224.79
16	tole committee	6.7%	173.61
17	women environment group	1.5%	150.00
	Total/Average	100.0%	103.23
	Max		300
	Min		75

In Lalitpur Sub-metropolitan city, among private service providers, NEPSEMAC is serving highest number of households (35.8%). Details of other service providers is provided in following table. Private Service Providers are providing services in all wards of municipalities except in newly formed wards 28, 29 and 30.



## Appendix

- A- Survey Questionnaires
- B- Checklist of Survey
- C- List of Enumerators and Supervisors

Supervisor – Ganesh Bhattarai

### Enumerators

- Shanker Awasthi
- Noki Tamang
- Renu Lama
- Nita Chaulagain
- Rojeena Shrestha
- Dil Devi Maharjan

# ***Attachment-7***

***Situation Analysis***



Government of Nepal  
Ministry of Urban Development  
Solid Waste Management Technical  
Support Center  
Shreemahal, Pulchowk Lalitpur, Nepal



# Situation Analysis of Solid Waste Management of Lalitpur Sub-Metropolitan City

*SWM Service Improvement Plan (SIP)  
for Output Based Aid (OBA) Project*

December 2015

Submitted by Joint Venture



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## 1. Description

### 1.1 General

This Final Situation Analysis Report on Solid Waste Management Service Improvement Plans (SWM-SIPs) is submitted by the JV of Multi Disciplinary Consultants (P) Ltd, Nepalconsult (P) Ltd and DA Nepal (P) Ltd.(herein after referred as the 'consultant') as part of 'Terms of the Contract Agreement' signed with the Solid Waste Management Technical Support Centre (herein after referred as the client). The agreement for the assignment was signed on Feb 11, 2015 and work commenced on Feb 26, 2015 with an introductory consultative meeting between the client and the consultant.

### 1.2 Context

The Situation Analysis Report is prepared following the OBA Design Framework Approach by collecting and providing the information required for each criteria and parameters forming the OBA Design Framework.

In order to enhance the financial sustainability, improve service quality, and enable expansion of SWM service coverage over a four year period, the project has included three components as described below:

- **Component 1 - Service delivery subsidy**
- **Component 2 - Implementation support to participating municipalities**
- **Component 3 - Project management, monitoring, evaluation and communication.**

The basic eligibility criteria of compliance with the requirements of SWM SIP OBA project are described in Table 1.1.

**Table 1-1: Basic eligibility criteria:**

Eligibility Criteria	Compliance		Remarks/Source
	Yes	No	
• <b>upfront commitment through a resolution or signing of letters of commitment :</b>	Yes		LOI signed by CEO Rajendra Kumar Poudel, Aug 04, 2011
• <b>access to a landfill site that is operational,</b>	Yes		Sisdole landfill site shared with Kathmandu Metropolitan City
• <b>have a basic functioning SWM system in place</b>	Yes		Environmental and Sanitation Section with nominated Environmental Engineer
• <b>agree to prepare a SWM strategy and action plan,</b>	Yes		Strategic Planning prepared in

### 1.3 Study Area

The project covers Lalitpur Sub-Metropolitan City.

#### 1.3.1 Location:

It is located in [Bagmati Zone](#), Lalitpur District, one of the seventy-five [districts](#) of [Nepal](#). It is one of the five municipalities (recently extended to 21 municipalities, Dec 2014), in the Kathmandu Valley. The geographic location is Latitude: 27.67° and Longitude: 85.33°.

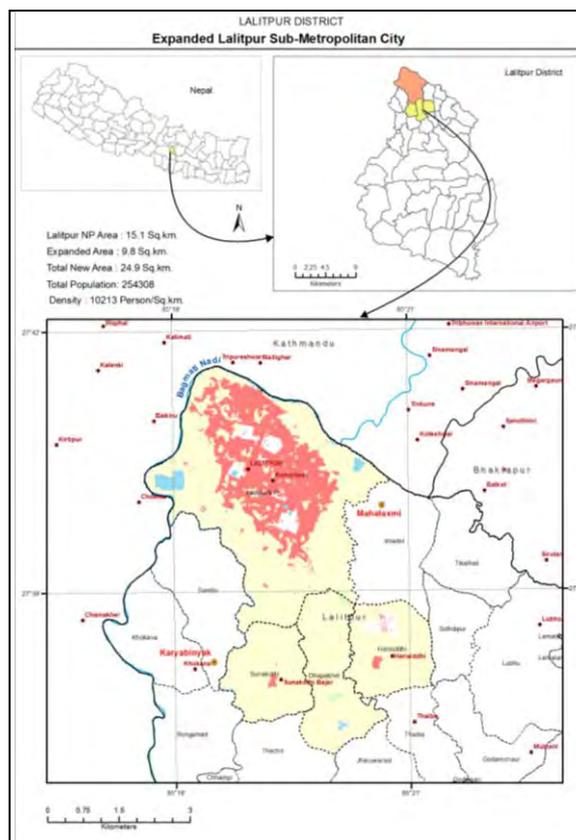
### 1.3.2 Area and Terrain:

Lalitpur municipality is located at an elevated plateau with its outer edges fanning out with gentle slopes towards the rivers Bagmati with Manohara in North and West that form its boundaries. The municipality covers 24.98 SqKm of area including the existing 15.15 Sqkm. The VDCs recently amalgamated to the Lalitpur municipality are Sunakothi, Dhapakhel and Harisiddhi with a total population of 254,308 and population density of 10,213 persons/SqKm<sup>1</sup>.

The altitude of the city varies from a minimum of 1266 m to a maximum of 1366 m.

### 1.3.3 Climate:

The city lies within the warm temperate climate zone of the Kathmandu valley, with typical monsoonal two-season year. Yearly average temperature in the city is 15-20° Celsius and receives yearly average rainfall of 2000-2400 mm. October to May is known as dry season from and the remaining months as the wet season with the monsoon period from June to September. It has hot, dry and warm season from mid April to mid October. Dry and cold season occurs from mid October to mid January and cold and wet season from mid January to mid April.



### 1.3.4 Municipal Structure and Land Use:

The city spread over an area of 15.15 km<sup>2</sup> and is divided into 22 wards, and recently extended to 30 wards with annexation of nearby VDC. The Municipal Area is now extended to 24.98 sq. km.

Table 1-2: Municipality area by wards:

Ward	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Area (SqKm)	0.48	1.11	1.65	2.04	0.76	0.24	0.21	0.48	0.77	0.76	0.1	0.13	0.75	1.72	2.28
Ward	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Area (SqKm)	0.08	0.6	0.14	0.16	0.16	0.07	0.45	1.47	0.9	1.3	1.55	1.47	0.67	1.3	1.14
<b>Total Area (ward 1-30)</b>	<b>24.94Sq Km.</b>														

Source: Lalitpur Sub-metropolitan City Official Website

### 1.3.5 Population and Household (Census, 2011):

The population of the municipality is growing at the rate of 3.55% in LSMC. The built-up area is also growing rapidly.

<sup>1</sup> Local Governance and Community Development Project, MOFALD, 2015

<sup>2</sup> Lalitpur Submetropolitan City Website

**Table 1-3: Population of LSMC**

Municipality	Nr. Of Households	Total population	Male	Female	Area (Km <sup>2</sup> )	Built-up Area (Km <sup>2</sup> )	Population Density P/Km <sup>2</sup>
Lalitpur <sup>3</sup>	54,581	220,802	113,781	107,021			14,000
LSMC <sup>4</sup>		226,728			15.15	14.00	14,966
Extended Lalitpur*1		254,308			24.98		10,213

Note: \*1 LGCDP 2015

The total population by wards and by gender is provided in Table 1-4.

Table.1-4: Total population and Households in Municipality by Wards:

Ward	Population			House Hold
	Male	Female	Total	
1	4665	3769	8434	2221
2	10369	8692	19061	4839
3	7315	6767	14082	3528
4	7580	7787	15367	3913
5	3152	3252	6404	1516
6	3474	3306	6780	1563
7	4075	3774	7849	1839
8	5958	5442	11400	2816
9	7385	6523	13908	3484
10	3508	3046	6554	1729
11	2237	2221	4458	1010
12	3064	2827	5891	1342
13	7400	7467	14867	3772
14	10518	10714	21232	5438
15	6999	6859	13858	3480
16	2156	2206	4362	858
17	5551	5093	10644	2678
18	2851	2926	5777	1200
19	3779	3606	7385	1774
20	3958	3763	7721	1978
21	2384	2275	4659	1143
22	5403	4706	10109	2460
23	3645	3357	7002	1854
24	1206	1218	2424	571
25	1584	1668	3252	753
26	2834	2979	5813	1377
27	2128	2151	4279	1020
28	1432	1440	2872	756
29	2063	2096	4159	1070
30	1883	1822	3705	911
<b>Total</b>	<b>130556</b>	<b>123752</b>	<b>254308</b>	<b>62893</b>

### 1.3.6 Institutional and commercial activities:

The municipality has most of the basic urban facilities. Commercial activities are rapidly growing and this has also accounted for increased generation of solid waste in the city.

<sup>3</sup>Population census, CBS, 2011

<sup>4</sup>Solid Waste Management in Nepal, Current Status and Policy Recommendations, Asian Development Bank (ADB), 2013

**Table 1-5: Institutional and commercial activities in LSMC**

<b>SN</b>	<b>Institutional/Commercial facilities</b>	
1	Educational Institutions	212
2	Health institutions	38
3	Sports and recreation	11
4	Government offices	49
5	International Organization/Institutions	14
6	Banks	19
7	Major Hotels	13
8	Major Super Markets	5
9	Vegetable Market	3
	<b>Total</b>	<b>364</b>

*Source: Solid Waste Management Technical Support Center (SWMTSC), June 2012*

## **Annexes**

Annex 1- Executive Summary

Annex 2- Review of all previous SWM studies

Annex 3 - Review of Strategies and plans-Main elements of the municipality's long-term strategy

Annex 4 - Existing baseline technical data and information

## Annex 1- Executive Summary

LSMC has a separate team for management of solid waste in the Municipality, and is using the landfill site at Sisdole jointly with KMC. As the municipality has been added with 8 more wards recently, the challenges of coverage and service delivery will be more in LSMC now compared to the earlier case. The following major challenges within the existing SWM system in LSMC have been identified.

### Collection and transportation service:

- › Collection services are provided in all current 22 wards by the LSMC (11 wards) and by private service providers (11 wards). The waste collection route is listed in Table 1.1: List of Collection route in LSMC; It is estimated that more than 30 private organizations are serving SWM in LSMC, mainly providing door-to-door collection of solid waste. According to the 2004
- › There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC;
- › Institutions, supermarkets and hospitals have individual written agreements with LSMC for waste collection;
- › The recent municipal reform will increase LSMC by 8 wards which will need extension of the SWM service to these areas;
- › Industrial and medical Waste from Hospitals are not considered;
- › Medical waste from smaller clinics is not separated in collection.

### Recycling and composting:

- › The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill.
- › A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households
- › 3,700 Compost bins have been distributed to households at subsidized rates (500 NRP versus full cost of 2,500 NRP)
- › An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste
- › There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling.

LSMC have established a resource recovery center in Ward 16 where informal sector workers may sale plastic, paper, etc. at regulated prices.Treatment and disposal:

- › All waste for disposal is transported to the Okharpauwa landfill (33 km from the city center) which is operated jointly by Kathmandu and Lalitpur
- › There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility
- › The existing landfill has only limited remaining capacity and the long term landfill situation is unclear
- › Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

### Institutional set up for SWM:

- › A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers, usually convenes on a monthly basis
- › The Environment and Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects
- › There is no contractual framework between LSMC and the private service providers concerning their involvement in SWM
- › The city does not charge households and businesses in the core areas serviced by the City, while waste generators in areas with private service provision have to pay for the service

- > The Municipality recently imposed waste management tax collected through Integrated Municipal Property tax System (IMPT) at the rate of NPR 180 per annum. This tax is considered double taxation in relation to the areas where Private Sector raise waste management fees.
- > The tariff of the private service providers is unregulated and no reporting on revenue collection and service performance takes place

>

Information and awareness activities:

- > The Social Welfare Division conducts training programs for women's groups including training on SWM
- > Private sector service providers such as NEPSEMAC, NEPCO, WEPCO and 13 other PS/NGO organisations are encouraging and giving training to people for household level composting, and source segregation,

***Preliminary recommendations for Solid Waste Management Service Improvement***

In line with the National SWM policy, the 2014 Solid Waste Management (SWM) Strategic Plan and Action Plan for Lalitpur Sub-metropolitan City<sup>5</sup> (the Strategic Plan) identified the long term Strategic Objectives in relation to waste management. The strategic Objectives are provided in detail in Annex 3.

>

There needs to be specific targets in the strategic plan for recovery of organic and recyclable fraction and waste for landfill over the planning period. These should be focused on recovery and waste disposal targets.

The four-year Solid Waste Management Service Improvement Plan (SWP-SIP) needs to focus on long-term objectives of the Strategic Plan and address the immediate challenges within existing SWM system in Lalitpur Sub-metropolitan City. The SWM SIP should focus to improve on collection services, policy on gradual introduction of tariffs in LSMC service core areas and a regulation of tariffs of private operators in non-core areas, appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share, improved operations practices at transfer and recovery sites, and plan for healthcare waste management.

These will also have financial implications and the investment and support should be prioritized as per the priority of the actions, and should be based on LSMC's capacity to deliver the services as discussed above. Further surveys and feasibility studies should focus on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste, and also a feasibility study on the establishment of MRF facilities at the existing temporary transfer station (on main street side) and at the new transfer station is required.

Monitoring and evaluation will be crucial. The implementation of the improvement plans need to be monitored and evaluated by the Solid Waste Management Committee assisted by the Environment and Sanitation Section. The monitoring and evaluation process needs to be supported by the data in the quarterly Technical Scorecards submitted under the OBA project. This will not only help timely completion of the project, but it will also support LSMC to efficiently mobilize its resources to solve the existing SWM challenges.

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<sup>5</sup> Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, Ministry of Urban Development, Solid Waste Management Technical Support Center (SWMTSC), Final Report January 2014 (submitted by Engineering Study & Research Centre (P) Ltd, Ministry of Urban Development for Lalitpur Sub-metropolitan City.

## **Annex 2- Review of all previous SWM studies**

A diagnostic study was carried out on solid waste management status of 58 municipalities of Nepal in 2005 by SWMTSC (then SWMRMC) which also included LSMC. The diagnostic report was updated in 2008 and it also focused on SWM status and municipalities' provisions and capacities.

JICA also carried out detailed studies on SWM in Kathmandu Valley which included LSMC in 2005, The study was focused mainly of collection/transportation system and composting practices, and was based on some pilot projects.

In 2011, a study titled 'Integrated SWM of Kathmandu Valley' was conducted which covered overall aspects of solid waste management in the valley with focus on existing gaps and technology options that can be promoted for better solid waste management of the valley.

In 2013, a study was conducted by Solid Waste Management Technical Support Center (SWMTSC) in support of ADB. The study was titled 'Solid Waste Management in Nepal, Current Status and Policy Recommendations' and it focused on existing status, gaps and recommendations for policy interventions.

However, all these studies lacked implementation support and monitoring of the progress. The OBA study is based on identification of gaps, municipality's contribution to meet the gaps, support needed to increase the performance efficiency and monitoring of the same based on specific indicators within a timeframe.

### **Annex 3 - Review of Strategies and plans-Main elements of the municipality's long-term strategy**

Based on the situation, the Solid Waste Management (SWM) Objectives of Lalitpur Sub-metropolitan City (January 2014) identified following long term Strategic Plan and Action Plan :

- › To improve collection and transportation system of source segregated waste
- › To promote 3R approach for waste minimization
- › To improve waste treatment and final disposal system
- › To promote public participation and behavior change of different stakeholders in SWM
- › To enhance organizational, institutional and legal arrangements for effective SWM service
- › To develop financially sustainable SWM system
- › To facilitate special and hazardous waste management
- › To establish Municipal Solid Waste Management Information System

Furthermore, the Service Improvement Plan under OBA has established ambitious targets for recovery of organic and recyclable fractions and waste for landfill over the planning period of 4 years:

- › Recovery of organic waste to increase from zero in 2014 to 40% in 2018 and 90% in 2028
- › Recovery of recyclable fraction to increase from 10% in 2014 to 40% in 2018 and 100% in 2028
- › Waste for landfill to decrease from 95% in 2014 to 62.5% in 2018 and 12% in 2028

The long term strategic objectives are well in line with the National SWM policy.

The SWM Strategic Plan and Action Plan are in line with the template developed in the OBA project in 2012.

Outside the Strategic Plan, two separate developments may significantly change the basis for SWM planning in Lalitpur:

- › As of December 2014, the government has announced a municipal reform which will include 3 VDCs (38,000 inhabitants) in LSMC, with accompanying SWM service obligations (8 new wards from 3 VDCs will require SWM services).

In Harisiddhi, there 'Guthi land' is available, so they can provide it for composting and other purposes, but there is issue of accessibility and narrow roads. But if waste can be segregated, it may be a better place for composting and even MRF. At present, Shrijansil and NEPCO are working there. Willingness to pay is positive. Amount may be Nrs. 2 per day.

In Dhapakhel, willingness to pay is less and not much SWM activity is ongoing at present.

In Sunakothi, people and mainly the youth groups are active. The setting up of compost plant is ongoing with support from SWMTSC (equipment etc.) and municipality has also supported through EU project. Four clusters are ready to pay for SWM services. Shrijansil, as private waste collector is working there. Sunakothi may be better option than Harisiddhi for taking the waste from outside for composting etc. because of land, road accessibility and local support.

- › The Nepal Investment Board on behalf of GoN is conducting preparation of a Detailed Project Report under a competitive bid based on PPP for SWM and Waste –To\_ Energy generation in KTM Valley. The DPR includes three geographically defined packages including collection, transport, recovery, recycling, processing of all municipal solid waste , street cleaning, as well as river bank clean-up , with all technical options being left open to the bidders. Preferred bidders have been identified and negotiations have started, but in light of the complexity of the tender and contracts, it is assessed that the PPP contractors are unlikely to be in operation during the four year SWM-SIP period. Nevertheless, the PPP project shall be taken into consideration and the SWM-SIP designed for sustainable development irrespective of whether the PPP project is implemented or not.

## Annex 4 - Existing baseline technical data and information

### 4.1 Review

#### 4.1.1 Waste Generation<sup>6</sup> Data:

Based on ADB report of 2012, the average per capita MSW generation is 0.372 gm/capita/day thus making the total municipal solid waste generation of 83 tons/day. The municipality has total waste collection of 60 tons/day and this gives the collection efficiency of 72%.

As of now, the total waste generation of Lalitpur is about 90 tons/day, out of which municipality collects about 65 tons/day and private sector collects about 25 tons/day.

**Table 4-1: Waste generation of LSCM**

Municipality	Average HH Waste (kg/day)	Average HH size (number of members)	Average per Capita HH Waste (g/capita/day)	Total HH Waste (tons/day)	Total Commercial Waste (tons/day)	Total Institutional Waste (tons/day)	Average per Capita MSW (g/capita/day)	Total MSW Generation (tons/day)	Estimated Waste Collection (tons/day)	Collection Efficiency %
Lalitpur (ADB 2012)	0.90	4.84	185.91	42.15	36.80	5.35	371.82	84.30	60.0	71.2
Lalitpur <sup>7</sup>	1.19	4.84	246.1							

The average per capita waste generation is 171gm/capita/day in Ward Number 23, 284 gm/capita/day in Ward Number 24 , 284 gm/capita/day in Ward Number 25 , 454 gm/capita/day in Ward Number 26 , 225 gm/capita/day in Ward Number 27 , 258 gm/capita/day in Ward Number 28 , 236 gm/capita/day in Ward Number 29 is, and 144 gm/capita/day in Ward Number 30.(SIP Survey, OBA Study 2015)

#### 4.1.2 Waste composition

The household waste consists of 77.9% organic, 9.8% plastic, 5.2% paper, 2% glass, 0.66% metal, 0.74% textile, 0.75% rubber and leather, and 2.86% others including inert materials.

**Table 4-2: Waste Composition of LSMC<sup>8</sup>**

Waste type	Organic waste	Plastic	Paper	Glass	Metal	Textiles	Rubber/leather	Others
	%	%	%	%	%	%	%	%
Household waste	77.94	9.81	5.23	1.99	0.66	0.74	0.75	2.86
Institutional waste	14.53	23.05	41.05	0.11	1.43	0.00	0.19	19.64
Commercial waste	39.36	21.05	30.14	1.01	0.25	0.06	0.16	7.97

The household waste management practices show that 26.27% of the households practice composting. Burning, animal feeding and disposal in open fields are also recorded. People mostly depend upon municipal, private or other informal services of waste management.

<sup>6</sup>Solid Waste Management in Nepal, Current Status and Policy Recommendations, Asian Development Bank (ADB), 2013

<sup>7</sup> SIP Survey, OBA Study 2015

<sup>8</sup>Solid Waste Management in Nepal, Current Status and Policy Recommendations, Asian Development Bank (ADB), 2013

**Table 4-3: Household waste management practices in LSMC**

SN	HHs waste management practices	%
1	Door to door	30.6
2	Temporary collection center	0.8
3	Open space	3.4
4	Burn	8.6
5	Disposal in Own field	5.9
6	Composting	19.2
7	Give to Waste picker	26.3
8	Animal feed	2.5
9	Others	2.9
	Total	100.0

Study of disposal behavior with respect to time of the day showed that most of the households (76% of the households) practiced waste disposal 2-3 times every week. Around 23% practiced weekly disposal while only 20.5% said they would dispose waste every day.

**Table 4-4: Times of waste disposal by households in LSMC**

SN	Times of waste disposal	%
1	Immediately	31.92
2	onetime each day	20.62
3	2-3 times/week	32.20
4	Weekly	15.25
	Total	100

#### 4.1.3 Existing solid waste collection, street cleaning and transportation system:

##### 4.1.3.1 Street Cleaning and Waste Collection:

Most of the street sweeping is carried out by the municipality. There are 165 sweepers employed to sweep the core areas of the city twice a day and most of other areas once a day. This includes 66 sweepers working for different wards, 40 helpers for loading waste on transport vehicles and remaining for street cleaning. Curb-side collection and on-ground collection are practiced along with door-to-door collection. LSMC have introduced a bell collection system so that residents can bring their garbage into the collection truck directly by themselves.

The household survey showed that almost 48% of the households received waste collection services from the either the private sector or local NGOs or CBOs, and around 47% received waste collection services from the municipality. (SIP Survey, OBA Study, 2015)

**Table 4-5: Waste Collection as received by households, LSMC**

SN	Service providers	%
1	Municipality	46.96
2	Private/NGO/CBO	47.97
3	Not known	5.07
	Total	100

##### 4.1.3.2 Final transportation and disposal methods

The waste collected by the municipality is finally disposed off in Okharpauwa landfill site which is 33Km away from the main city. Disposal of waste in Okharpauwa landfill site has been started since 2005. The waste collected by other private sectors is sorted at site in Bagmati river bank and also at Balkumari site, and some are disposed to the container allocated by the municipality.

## Primary transportation and transfer station

Power tiller, trucks and other vehicles are in use for the transportation of collected waste. In some areas the wastes are collected in daily basis whereas in some areas once a week or twice a week. The collected waste is taken to the Balkhu transfer station where the segregation of waste is done.

**Table 4-6: Type of equipment used by municipality for SWM**

SN	Type of equipment	Capacity (m <sup>3</sup> )	Number
1	Power tiller	2.3	2
2	Tipper/dump trucks	3.5	12
3	Secondary vehicles	15	4

### 4.1.4 Resource recovery method

#### 4.1.4.1 Waste segregation

In some wards such as ward no. 22 and ward no. 13 source-segregation collection is also practiced. In other wards, source segregation is practiced but no formal records are available. Most of the street sweeping is carried out by the municipality sweepers.

#### 4.1.4.2 Recycling

There are no recycling programme in LSMC but few NGOs, Kawadi and women's group involved in waste management are practicing recycling. Waste pickers also collect the recyclable material from the dumping area and sell them to Kawadi. According to municipality 3000 kg/day recyclable waste is collected by private sector/scrap dealers. 4000 kg/day is segregated by 26 scrap collectors who are helping the municipality in its Transfer Station in Balkumari. Some private service providers like WEPCO and NEPCEMAC also do the collection of recyclable waste from the collected waste.

#### 4.1.4.3 Composting

There are no communities level composting or municipality levels composting plant in LSMC. It was found that some people have been using organic wastes for the organic manure by composting or decomposing them at the field. Private sectors such as NEPCEMAC and WEPCO are encouraging and giving training to people for household level composting.

### 4.1.5 SWM service arrangements

Municipality provides the services such as street sweeping, collection, transportation and as well as processing for the solid waste management. Street sweeping practice is performed daily with own manpower from municipality, private contractor and women's group and the waste collected from street sweeping is disposed through open piles. LSMC is conducting waste segregation campaign which covers 2500HHs in ward 22 and 600HHs in ward 13. Waste management activities are being conducted in wards 2, 3, 4, 5, 15, 16, 18 and 22 of LSMC through the support of EU project.

### 4.1.6 Special waste management

Patan Hospital and B&B Hospital have their own incineration to manage their hazardous medical waste. Other than that, there are no provision for the management of special waste such as medical waste, industrial effluents, dead animals etc. such hazardous waste were found mixed with the household waste and being collected together by the municipality and taken to the Balkumari transfer station, and finally to the Okharpauwa landfill site. Health care waste needs further systematic addressing. Other waste like industrial waste, dead animal bodies, construction debris, bulk waste and electronic waste are increasing, and addressing of such waste need to be planned.

#### 4.1.7 Revenue from SWM service charges

Until last fiscal year, there has been no formal revenue generation for SWM services by LSMC. Since this is charged jointly in the annual house tax, there is no separate revenue collection system. The past record shows that only 15% of the people of the municipality are paying house tax, the revenue collection for SWM will also be quite low in the first year (FY 2072/73). But the private organizations collecting waste charge fees on monthly basis. The prices range from NRs 100 to NRs 350 per month. The service charges for collection of solid waste from households and commercial entities have been defined by the municipality through its 21<sup>st</sup> Municipal Council as follows;

**Table 4-7: Revenue Scale for Households/per annum**

SN	Category of houses	Annual SWM charge
1	House with area of up to 2000 sq. ft.	NRs 182
2	House with area from 2001 sq. ft. to 4000 sq. ft.	NRs 360
3	House with area from 4001 sq. ft. to 6000 sq. ft.	NRs 720
4	House with area above 6000 sq. ft.	NRs 1,500
5	Colony/Apartment	NRs 15,000

Source: LSMC, 2071/72 BS

Upon request, if the residents ask for collection of municipal waste, the municipality provides services with charges as;

- A: Triper                                NRs 1,500 Per Trip  
B: Tractors                              NRs 500 Per Trip

**Table 4-8: Revenue Scale for Commercial entities**

SN	Category of commercial entities	Annual SWM charge
1	Retailers and Tea/coffee shops	NRs 500
2	Wholesalers, Medical shops and Restaurants	NRs 1000
3	Small Departmental Store, Mart and Schools/Colleges	NRs 2000
4	Large Departmental Stores (e.g. Bhatbhateni, Namaste, etc)	NRs 3,000 Per Trip
5	Hospitals and Nursing homes	NRs 5,000 Per Trip

This is expected to raise the revenue generation from SWM services by the municipality. Wider campaigns to encourage the locals to pay tax would be needed to achieve the targets stipulated for OBA package of the municipality.

The average Willingness to Pay for solid waste management services is Rs 154 per month with significant standard of deviation of 104.3 as per the survey by SIP Survey 2015. People are willing to pay for solid waste management services but there is dis-satisfaction of gap in services.

**Table 4-9: Willingness to Pay (NRs/month)**

mean	sd	min	max
154.27	104.34	10	500

However, there is confusion on dual charge of SWM service where the private sector is also collecting the monthly charge and municipality is also charging annual charge to the same households. This needs to be addressed through proper record and revenue system.

#### 4.1.8 Institutional Set-up

##### 4.1.8.1 Organizational structure

In 2004, LSMC approved a new organizational structure where it designated the Environment Section to be responsible for SWM activities. The Environment Section is comprised of two sub-sections, the Sanitation Sub-section and Mechanical Sub-section. It is located at Balkumari separately from the central LSMC office with its own garage and workshop building. The Public Works Division is responsible for identification,

planning, development, and monitoring of municipal infrastructure projects. In matters of SWM facilities planning, this Section should be closely involved. Also, CDS has been implementing waste minimization training as a component of their community mobilization program for the last ten years. LSMC should tap into the experience of this section, and jointly formulate and implement effective community level SWM programs.

#### 4.1.8.2 Managerial practices

The post of the Environment Engineer heading the Environment & Sanitation Section was established in 2004, and an officer has been working as the Section Chief. In terms of reporting, the Environment Section Chief reports directly to the CEO of the municipality. Close coordination with the Public Works Division is maintained on various SWM issues. LSMC established the Solid Waste Management Committee, composed of four Ward Chairpersons with relevant municipality staff as observers, which is usually convened on a monthly basis. This platform is used to settle daily waste management problems and make recommendations of some principles about SWM.

#### 4.1.8.3 Human resources and capacity

Total number of staff under the Environment Section is 213 persons or about 40% of all LSMC staff. Over 80% of 206 persons are field level staff.

**Table 4-10: LSMC Environment Section Staff**

Staff Category	Number of Person
Sweepers/helpers	165
Drivers	20
Environment Engineer (Pradeep Amatya)	1
Administrative Officer (SurendraAwale)	1
Mechanics	9
Supervisors	2
Administrative	7
Technician	3
Sweeper Captain	5
Total	213

Source: LSMC 2009/Survey 2012

The breakdown of human resources of the Environment Section is as follows:

##### (A) Senior Officers and Mid-Level Staff

LSMC senior officers all have solid educational and technical backgrounds in their respective fields, but not close relating to SWM. Some technical reorientation training would be useful so that they could build on their previous knowledge and expand capacities in the field of SWM. The Environment Section would need more strengthening of management capacities, especially in view of their responsibility to manage a sizable field staff.

Mid-Level staff also needs support in office management and communication skills. Furthermore, most of the staff at this level, aside from the assistant officer (NayaSubba), have not received any training on SWM and are only familiar with certain aspects such as street sweeping, waste collection, and transportation.

##### (B) Field Level Staff

In LSMC, an assistant officer (NayaSubba), with the support of four supervisors and field level supervisors called Jachakis and Naikes, are managing all field level staff. Among the sweepers, 76 are assigned at the ward level and conduct various cleaning jobs in addition to regular street sweeping. The rest of the sweepers is assigned under the central LSMC office and separated into the following groups:

☐ Sweepers concentrating on tourist areas

☐ Sweepers cleaning the major streets and highways

☑Waste loaders going around with the collection trucks

☑Drainage cleaners

The sweepers usually work in two shifts, (6:00 a.m. to 09:00 a.m., 5:00 p.m. to 7:00 p.m. only at Mangal Bazar) but some like the drainage cleaners work only in one eight-hour shift.

#### 4.1.9 Financial Provision

##### Allocation of budget and expenditures

According to the municipality source, the budget and expenditure information on total allocation on SWM is provided as below;

**Table 4-11: Budget allocation (NRs)**

S N	Particulars	2070/071	2071/072	2072/073
		Budget	Budget	Budget
i.	Total Municipal budget	52,46,04,000	72,82,96,000	74,27,00,000
ii.	Budget in SWM	2,34,00,000	3,56,78,680	4,34,50,000
	Percentage	4.4	4.9%	5.8

**Table 4-12: Details of expenditure for SWM services (NRs.)**

S N	Expenditure Items	2071/072	2072/073
		Budget	Budget
i.	Fuel and lubricants	1,39,78,680	1,62,00,000
ii	Landfill site operation	17,00,000	22,00,000
iii	Equipment/vehicle maintenance	35,00,000	40,00,000
Iv	Environment Improvement Program and Miscellaneous	25,00,000	30,50,000
V	EU Partnership	1,40,00,000	1,50,00,000
vi	Vehicle Purchase		20,00,000
vii	SWM - GoN		10,00,000
	<b>Total</b>	<b>3,56,78,680</b>	<b>4,34,50,000</b>

#### 4.1.10 Private Sector Participation:

Lalitpur is involving NGOs and CBOs in waste collection, compost production, and awareness raising. NGOs such as NEPCEMAC, WEPCO, NEPCO and Sirjansil Batabaran Samrachan Kendra are active in the municipality along with many other NGOs and CBOs.

On the other hand, door-to-door collection has also been practiced in many areas mostly by private companies or NGOs such as NEPCEMAC, WEPCO, and Sirjansil Batabaran Samrachan Kendra etc. who charge a collection fee to the participating waste generators.

#### 4.1.11 Preliminary Recommendations

LSMC is providing solid waste management services as per its current resources; however this service needs to be extended and improved in terms of;

### **Coverage and improvement in service delivery**

The municipality has to extend its coverage in core as well as non-core areas of the municipality. Along with this the municipality has to focus on technical aspects as well as operational aspects of solid waste reduction, segregation, collection and disposal systems.

### **Improvement in institutional efficiency**

Though the municipality has a dedicated team for solid waste management, it needs more institutional strength for more efficient solid waste management services. Improvement in system, human resource capacity and resource mobilization is needed to be considered for sustainability in SWM of LSMC.

### **Establishment of focused PPP cell/unit**

Solid waste management is one of the major and critically important activities of any municipality and PPP has been regarded as one of the effective means for SW management. Hence, LSMC is recommended to have focused PPP cell or unit for streamlining entire SWM activities of the municipality, private companies and other informal sectors in order to reduce the municipal expenditure in SWM and gradually to start generating revenue from SW and to improve its services and coverage as well.

### **Model agreement with risk, resource and revenue sharing**

Based on interaction with the private companies and other concerned involved in SW management, a model contract agreement is to be developed. This should cover details of risk, resource and revenues sharing provisions including dispute resolution mechanism under the existing legal provision along with the guidelines for PPP procurement. Guideline for private involvement will strengthen the municipal waste management.

### **Public Awareness and capacity building**

Capacity of TLOs, NGOs and CBOs need to be enhanced along with their level of awareness and understanding.

### **Monitoring and Information system**

A separate monitoring team and a MIS unit is required to ensure the quality service delivery in solid waste management by the Municipality and the supporting private sectors.

## **4.2 Key Performance Indicators**

The OBA projects will need to be monitored and evaluated on basis of municipality exercises and progress. This will need to be done on four fronts; (1) Strategy/Plan, (2) Performance monitoring, (3) Service Provision, and (4) Financial aspects. Hence key performance indicators have been identified, and they will be score on two systems; (a) *Binary System* where the monitoring and evaluation will indicate only 'pass' if indicators are fulfilled, and 'fail' if the indicators are not fulfilled; and (b) *Specific System* where the indicators are monitored and evaluated in terms of figures like increased amount of income, reached percentage of services, number of staff, etc. Followings are the key performance indicators for the project in LSMC as recommended by SWM OBA SIP report prepared by cowi Consultants.

SN	Key Performance Indicators	Remarks
<b>1</b>	<b>Indicators on Strategy and Plans</b>	
a	SWM Subject Committee	Binary - Pass/Fail
b	Section/unit of municipality tasked with overseeing SWM	Binary - Pass/Fail
c	SWM-SIP review and up-to-date	Binary - Pass/Fail
<b>2</b>	<b>Performance Monitoring Indicators</b>	

SN	Key Performance Indicators	Remarks
a	Landfill operations and waste reduction	Binary - Pass/Fail
b	Communications systems	Binary - Pass/Fail
c	Service delivery monitoring	Binary - Pass/Fail
d	Fiduciary monitoring system	Binary - Pass/Fail
<b>3</b>	<b>Service Provision Indicators</b>	
a	Wards served	% of municipal urban and peri-urban wards
b	Visual cleanliness in public areas, main streets and secondary streets	% of wards receiving services
c	Customer Satisfaction	<i>% of customers perceiving services delivered to SWM-SIP target standards</i>
d	Safe disposal of collected waste	<i>binary pass / fail</i>
<b>4</b>	<b>Financial Indicators</b>	
a	SWM fee collection efficiency	NRs ..... increase
b	Increase in SWM fees charged	<i>% increase on previous year</i>
c	Labor efficiency	<i># of staff years per 1,000 paying customer</i>

The detailed table in provide is Appendix – 2.

#### 4.3 Additional Surveys and feasibility studies required:

The additional survey and investigation to be carried out for accomplishing the target of OBA SIP. They are:

- > Survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- > Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station
- > Preparation of PPP management Guideline
- > Detailed study of Waste Management being carried out by the municipality and the Private Sector.
- > Preparation of Data Base of SWM Services provided to the Households and collection of revenue.

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

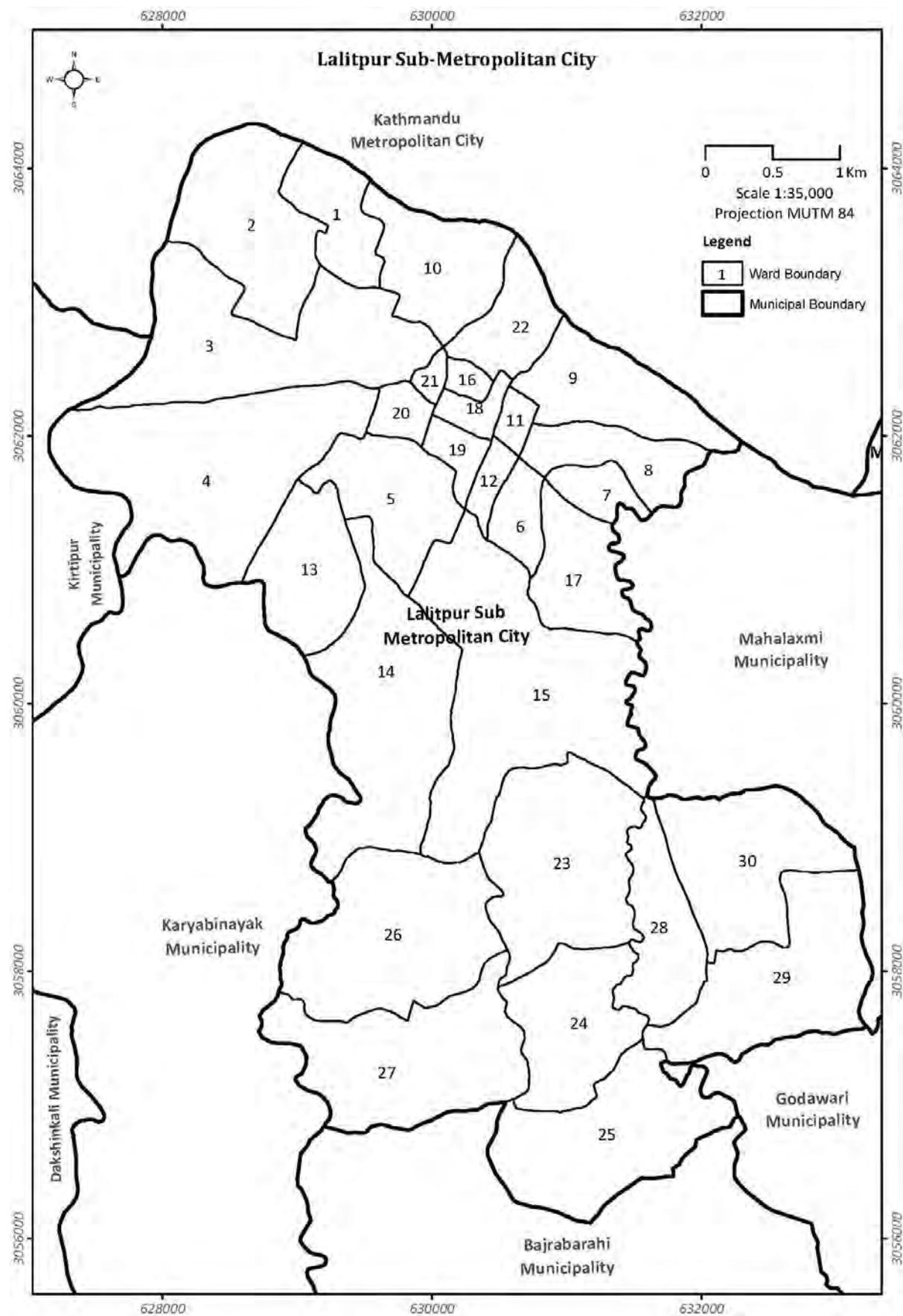
- > Establishing operational manual for segregation and transfer facility operations and management including MRF
- > Introduction of billing and revenue collection systems for SWM services
- > Establishing a monitoring, evaluation and performance management systems for SWM services
- > Design and implementation of 3R activities
- > Design and implementation of IEC campaigns
- > Assistance in development and implementation of information and awareness campaigns for clean city and source segregation of waste
- > Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment
- > Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.
- > Establishing Data Base for recording of SWM Services provided to the Households and collection of fees for providing SWM services.

## **Appendices**

Appendix – 1 : Extended Map of Lalitpur Sub-Metropolitan City (Ward wise)

Appendix – 2 : Key Performance Indicators of Technical Score Card

**Appendix – 1 : Extended Map of Lalitpur Sub-Metropolitan City (Ward wise)**



## Appendix - 2: Key Performance Indicators of Technical Score Card

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
<b><i>SWM strategy and action plan KPIs</i></b>							
1,1	SWM Subject Committee <i>(binary pass / fail)</i>	<b>Year 1:</b> (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR. <b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.	A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers has been established and usually convenes on a monthly basis.	Pass/fail	Pass/fail	Pass/fail	Pass/fail
1,2	Section/unit of municipality tasked with overseeing SWM <i>(binary pass / fail)</i>	<b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP. <b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.	At the operational level, the Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects.	Pass/fail	Pass/fail	Pass/fail	Pass/fail
1,3	SWM-SIP review and up-to-date <i>(binary pass / fail)</i>	<b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.	NA	Pass/fail	Pass/fail	Pass/fail	Pass/fail

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
1.4	Enabling PPP in MSW	<p>System for data collection on or self-reporting by private enterprises, NGOs and TLOs involved in MSW established.</p> <p>Municipality prepares and approves formal strategy/policy on and practical guideline for involvement of private enterprises, NGOs and TLOs in waste management.</p> <p>Municipality establishes regulation on the (maximum) size of tariffs collected by private enterprises and NGOs involved in waste collection.</p> <p>Municipality works with SWMTSC on establishing (improving existing) contracts private operators.</p> <p>Municipality establishes monitoring system for private operator service delivery in accordance with contract.</p>	<p>Collection services are provided by LSMC in 11 wards and by private service providers in 11 wards</p> <p>There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC</p>	Pass/fail	Pass/fail	Pass/fail	Pass/fail

**Performance monitoring KPIs**

2.1	Landfill operations and waste reduction  (binary pass / fail)	<p><b>Year 1:</b> Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives 'no objection.'</p> <p><b>Years 2-4:</b> (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review.</p>	<p>All waste for disposal is transported to the Okharpauwa landfill which is operated jointly by Kathmandu and Lalitpur.</p> <p>There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility</p>	Pass/fail	Pass/fail	Pass/fail	Pass/fail
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#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
2,2	Communications systems <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality's SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address complaints). SWMTSC reviews communications system and gives 'no objection.' NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Years 2-4:</b> (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p>	Communication with key stakeholders such as private sector organizations, women group, TLOs, NagarikSamaj (citizen forum) and NGOs is the responsibility of the Environment Section, which organizes quarterly stakeholder meeting. The Environment Section head of LSMC is responsible for reporting to the municipal board.	Pass/fail	Pass/fail	Pass/fail	Pass/fail
2,3	Service delivery monitoring <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different</p>	The SWM service delivery monitoring is limited to monitoring of the vehicle log book and the waste collected from the specific route of that vehicle. However, in practice service is mainly evaluated based on cleanliness of streets and complain from	Pass/fail	Pass/fail	Pass/fail	Pass/fail

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
		<p>recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard's service provision KPIs. <b>NOTE:</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its service delivery monitoring system with up-to-date data for all indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.</p>	<p>nearby people.</p> <p>Vehicle use and fuel consumption is logged, but fuel provision by supervisor is based on normative consumption for specific route, and fuel efficiency is not monitored.</p>				
2,4	<p>Fiduciary monitoring system <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (iv) all financial indicators within the Technical Scorecard's Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives 'no objection.' <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its fiduciary monitoring system with up-to-date information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.</p>	<p>Expenditure for repair and maintenance of vehicles, tools and equipment and fuel consumption is recorded by the Account Section of LSMC based on instructions by the Environment Section. The cost of landfill operation is handled by KMC, with LSMC providing the amount required by the Landfill Operation Unit and recommended by SWMTSC. All financial transactions are recorded at LSMC and audited as per government rule by internal and external auditor every year.</p>	Pass/fail	Pass/fail	Pass/fail	Pass/fail

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
<i>Service provision KPIs</i>							
3,1	Wards served (% of municipal urban and peri-urban wards)	% of wards within a municipality's area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system.  Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.	Collection services are provided in the current 22 urban wards (91% on average) with daily door-to-door by two private operators and bring to truck collection by LSMC.  No service is provided in 3 new VDC included in Lalitpur as of January 2015.  In all 25 wards average service is 81% at the start of 2015	....% (old) ....% (total)	....% (old) ....% (total)	....% (old) ....% (total)	....% (old) ....% (total)
3,2	Visual cleanliness in public areas, main streets and secondary streets (% of wards receiving services)	Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.  ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.	LSMC consider street cleaning as the prime function of the municipality to keep the city clean. It is the visible and significant symbol to demonstrate the city as clean city.  Target: Street sweeping in core area and at main streets and public areas in other areas. No formal data is available but it is assessed that 75% of the area is clean.	....%	....%	....%	....%
3,3	Customer Satisfaction (% of customers perceiving services delivered to SWM-SIP target standards)	% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.  ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of	The municipality performs surveys of customer satisfaction with different services through the TLO representatives.  Baseline and targets based on very satisfied + reasonable satisfied to be established.	....%	....%	....%	....%

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
		customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.					
3,4	Safe disposal of collected waste <i>(binary pass / fail)</i>	Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm). The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received. Illegal deposits at transfer stations of private operators are cleared (year 1).	There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility	Pass/fail	Pass/fail	Pass/fail	Pass/fail
3.5	Waste segregation and composting at household level	Percentage of households practicing proper and correct waste segregation at household level based on random inspection of 10% of households provided with bins for waste segregation and/or home composting.	A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste	Pass/fail	Pass/fail	Pass/fail	Pass/fail

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
3.6	Waste recovery	Targets are established and actual performance is measured (by visual inspection and check records) for recovery of recyclable material and organic fraction in waste stream at transfer stations and landfill (share of recoverable materials actually being separated and recovered/sold/reused).	The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill. There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling. LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.	Pass/fail	Pass/fail	Pass/fail	Pass/fail

#### **Financial KPIs**

4.1	SWM fee collection efficiency (LSMC)	Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year.	Total tariff revenues collected in 2013/14 were NRP 20 Lakh. Expectations for 2015/16 are NRP 84 Lakh. The collection ratio for baseline is 20% for LSMC.	...%	...%	...%	...%
4.2	Increase in SWM fees charged <i>(% increase on previous year)</i>	Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.	LSMC collects 20 Lakh SWM fee (2013/14) from institutions, supermarkets and hospitals but did not collect a sanitation fee from households and small businesses in their service areas prior to the OBA project. This is equal to 2% cost recovery. Municipality will	NRs...	NRs...	NRs...	NRs...

#	KPI	Verifiable indicator	Target Values by Year					
			Baseline	1	2	3	4	
			introduce SWM fees for households from 2015. Target is based on 2015/16 expectations of 84 Lakh and gradual increases thereafter.					
4,3	Labor efficiency <i>(# of staff years per 1,000 paying customer)</i>	# of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average pf periods amounting to no less than 3 months.	Around 55.000 out of 60.000 households in the urban wards covered by LSMC receive SWM services. The total number of municipal employees in SWM is 206, including 4 administrative officers, 5 supervisors, 15 drivers, 40 loaders, 9 mechanics, and 133 street sweepers. That equals 3.74 staff years per 1,000 SWM customers. No figures are available for actual paying customers. This is to be established by the municipality and an annual improvement of 5% is targeted.	---	---	---	---	---

# ***Attachment-8***

***Proposed PPP Framework***

## **Attachment 8: Proposed Framework for PPP in SWM of LSMC**

### **PPP for Solid Waste Management Service Improvement of Lalitpur Sub-Metropolitan City (LSMC)**

#### **1.0 Background**

Lalitpur Sub-Metropolitan City (LSMC) has applied for Output Based Aid (OBA) support to accomplish following objectives related to management of solid waste (SW) in four-year period;

- To enhance financial sustainability,
- To improve service quality, and
- To expand solid waste management (SWM) coverage.

According to Solid Waste Management Act 2068 (SWMA 2068), local body is responsible for management of solid waste and private and community sectors can also be involved in management of solid waste. As provisioned in the Act nobody should carry out solid waste management related activities without obtaining license from the local body (Section 13) and the local body should award SWM function to private or community sector party only through competition (Section 15). These provisions have provided opportunity to local body to improve and enhance its SWM services by involving private and community sector and on the other hand imposed obligation to local body of issuing license and regulating private and community sector. Public Private Partnership is one of the effective modalities for involving private/community sector in managing municipal solid waste.

#### **2.0 Present Scenario of LSMC**

LSMC is one of the ancient cultural cities lying in Kathmandu Valley which became municipality in 1952/53 (2009 B. S.) and in the year 1995/96 (2052 B. S.) it received the status of Sub-Metropolitan City. As a growing city adjoining to the capital of a developing country, LSMC is also facing a challenge of managing solid waste. LSMC spends Rs. 90 million yearly in SWM, which is about 25% of its yearly budget. However, LSMC has been able in providing its SWM services to core areas only (about 40% of its total area) and rest of the fringe area is covered by private sector making presence of the private sector as major contributor for SWM in LSMC.

According to its SWM strategic plan (January 2014), the municipality is focusing on overall improvement of its SWM services by (a) increasing recovery of organic waste to 40% by 2018 (from zero in 2014) and 90% by 2028 (b) increasing recovery of recyclable fraction of waste to 40% by 2018 (from 10% in 2014) and 100% by 2028, and (c) decreasing waste to landfill to 62.5% (from 95% in 2014) by 2018 and 12% by 2028. In the above discussed context, the LSMC has identified following intervention under OBA support:

- Clear contractual framework for private operators combined with professional monitoring function in the municipality
- Higher level of door to door collection by private operators combined with waste minimization (waste segregation, composting and recycling) as well as awareness building and training
- Gradual shift in municipal focus to ensuring efficient and environmentally acceptable transfer and disposal and monitoring of collection service providers

There are 14 private companies involved in management of solid waste in LSMC, many NGOs/community organizations and many street pickers however, in the absence of formal registration of such service providers there is lack of proper record keeping. Licensing and registration of such service providers therefore is essential.

#### **3.0 Private Sector Participation in Managing Solid Waste**

According to SWMA 2068, solid waste management may be made in Public Private Partnership --a partnership with the private sector, community and non governmental body or organizations (Section 17). Public Private

Partnership (PPP) is considered as one of the effective methods of involving private sector in developing and managing municipal infrastructure and services. There is not a single definition of PPP accepted by all. PPP as defined in the Reference Guide, Version 2.0 (2014) published by the International Bank for Reconstruction and Development / The World Bank, Asian Development Bank, and Inter-American Development Bank, is a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance. Local Body Financial Administration Rules 2064 (LBFAR 2064) has defined the Public Private Partnership as an arrangement of contract concluded between the local unit or a group of such units and a legal person being eligible to conclude contract under the prevailing law to deliver service under these Rules and to jointly bear the risks thereof.

Partnership with the community and non-governmental organization/body can be for the works like:

- Promotion of public awareness for reduction of solid waste,
- Training for Source Segregation
- Collection of solid waste,
- Management after the closure of landfill site,
- Construction of the garden, and beautification

The SWMA 2068 has also given authority to the local body to fix service charge and realize from the concerned person, body or organization for making the management of the solid waste (Section 18) and empowered the local body to provide discount (up to 50%) on the service fee to the under-privileged group. Local body can award all of the following works to private sector company and any of the following works to community sector:

- a. Enhancement of public awareness in the reduction of solid waste,
- b. Source Segregation
- c. Collection of solid waste (starting of segregated waste collection),
- d. Transportation of solid waste,
- e. Use, reuse recycled use or processing of solid waste,
- f. Disposal of solid waste, and
- g. Management after closure

There is also Private Financing in Build and Operation of Infrastructure Act 2063 (2006) governing PPP in the country. The Act has indicated following modalities for PPP (Section 3):

- a. Build and transfer (BT)
- b. Build, operate and transfer (BOT)
- c. Build, own, operate and transfer (BOOT)
- d. Build, transfer and operate (BTO)
- e. Lease, operate and transfer (LOT)
- f. Lease, build, operate and transfer (LBOT)
- g. Develop, operate and transfer (DOT)
- h. By other methods of similar kind

Besides this, according to Section 24 of the Act, PPP project may be implemented in joint investment however, the financing of the Government shall not exceed twenty-five percent of the total project cost. Similarly, as public entity, LSMC should also consider the provisions of Public Procurement Act 2063 (2007) and Public Procurement Regulations 2064 (2007) so far as they are relevant.

There is Local Self Governance Act and Local Body Financial Administration Regulations governing LSMC's activities. Therefore, the provisions under the Act and Regulations relevant to involvement of private sector in management of solid waste are briefly discussed here.

Under OBA support, LSMC can have opportunity of involving private sector operators (company, NGO, or community organization) for following activities:

- a. Door to door collection of solid waste including street sweeping, waste segregation, composting and recycling
- b. Capacity building awareness campaign, training etc.
- c. Lending vehicles and equipment
- d. Lending physical facilities/spaces

#### 4.0 Private Sector Involvement Modality

Section 157 of LBFAR 2064 permits local body to involve private sector under Public Private Partnership for management of solid waste. Considering the legal environment and other relevant conditions, following modalities are considered as more suitable for private sector involvement however, management contract is the preferred one:

- a. Service contract
- b. Management contract
- c. Lease contract
- d. Concession

Special features of the modalities listed above are presented in table 1.

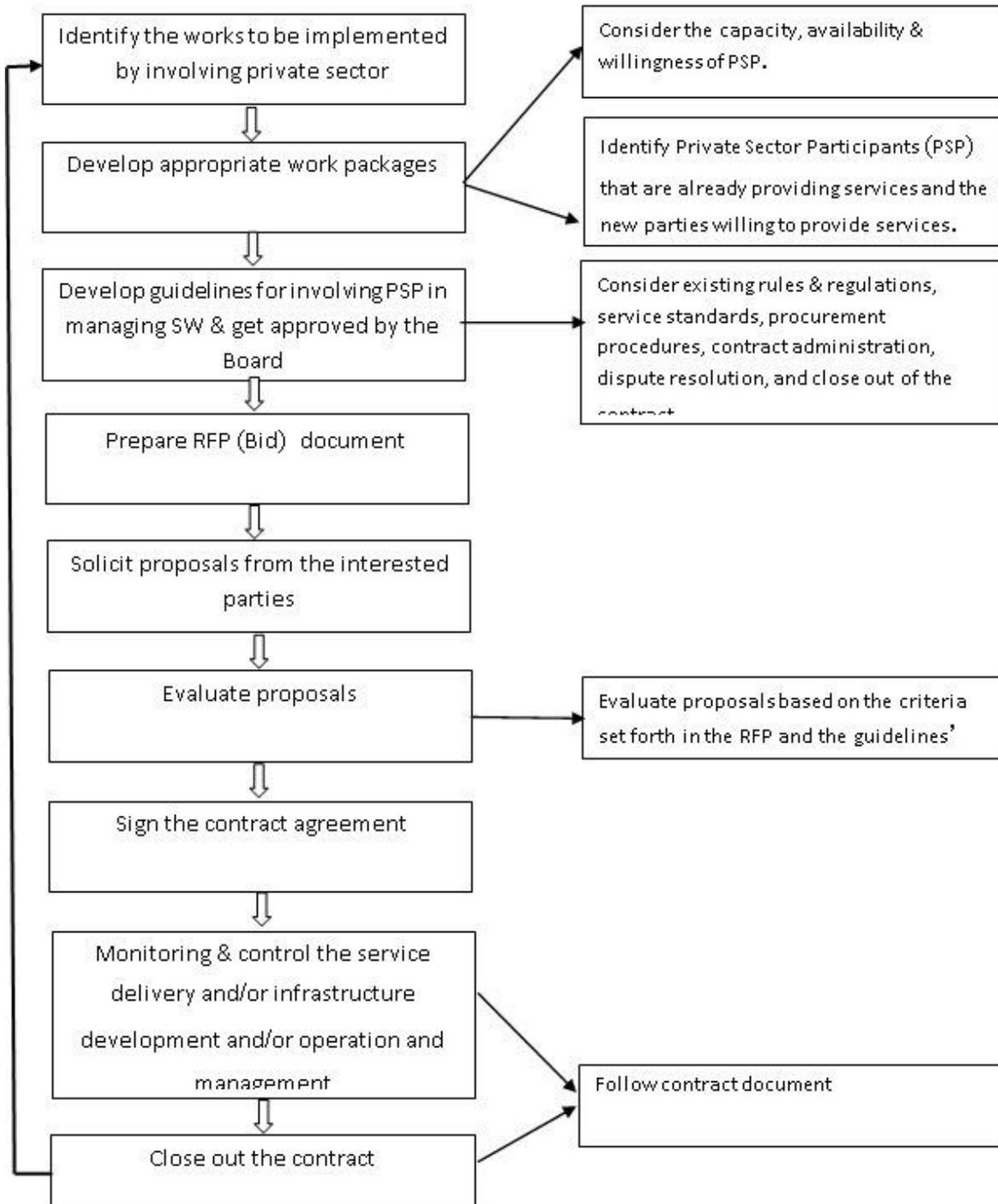
**Table 1: Private Sector Involvement Modalities and Their Special Features**

Modalities	Service Contract	Management Contract	Lease Contract	Concession
Descriptions				
<b>Scope of services</b>	Used for specific tasks specific skills & efficiency	Used for operating the whole service including maintaining the infrastructure & equipment. The private sector is allowed to collect service fee on behalf of the LB. Better to establish private sector performance standard.	Used for leasing the operation & maintenance of facilities, services or equipment. Private sector pays a lease fee and is allowed to collect tariffs.	Used for giving right to the private sector to provide service and collect revenue for a long period.
<b>Ownership of assets</b>	Local Body	Local Body	Local Body	Local Body
<b>Investment responsibility</b>	Local Body	Local Body	Local Body	Private sector
<b>Commercial risk</b>	Local Body	Local Body	Private sector	Private sector
<b>Operation, management &amp; maintenance</b>	Private sector	Private sector	Private sector	Private sector
<b>Duration of contract</b>	Up to 5 years	Up to 5 years	5 to 15 years	Up to 25 years

## 5.0 Procurement Process

Procurement procedure to be followed for private sector involvement in management of solid waste is presented as figure 1.

**Figure 1: Private Sector Involvement Process**



## 6.0 Issues and Recommendations

Issues related with management of solid waste through involvement of private sector in LSMC are listed below:

- i. As per the existing organizational set up of LSMC, SWM activities are looked after by the Environment Section. There are two sub sections Sanitation and Mechanical. There is Public Works Division, which is responsible for identification, planning, development, and monitoring of municipal infrastructure projects and Capacity Development Section conducts training and relevant capacity development activities. Now, for formal, systematic and effective involvement of private sector in municipal services starting with the SWM related activities, a dedicated PPP unit is recommended.
- ii. Human resource plays very critical role in effective operation and management of any organization. Under Environment Section, there are 213 employees, which is about 40% of the entire LSMC staffs. A major portion of these staffs are sweepers and helpers (77.46%) and drivers (9.38%). A proper planning and management of sweepers, helpers and drivers are critically important because they are directly involved in SWM activities and their role becomes very much important in successful involvement of private sector in managing solid waste. Service of these staffs can also be extended to the private sector fully or partially with better incentive, which also helps in reduction of operating cost of LSMC.
- iii. For better interdepartmental/sectional coordination orientation training on various aspects of PPP to municipal staffs is recommended.
- iv. The 21st Municipal Council has passed a resolution of levying service charge for solid waste management to each household and commercial entities and the municipality has started collecting service fee tying up with annual house tax whereas the private parties collecting waste are also collecting monthly service charge from the houses where they are providing services. This has caused duplication of service fee (From Rs. 100 to Rs. 350 per month per household) to some households, which is to be corrected as soon as possible. Only 15% households are currently paying house tax to the municipality. It shows, the municipality should expand the service coverage to its entire area and rectify the duplication of service fee. Expansion of service coverage helps generating more revenue to the municipality.
- v. The municipality currently operating two power tiller of 2.3 m<sup>3</sup> capacity, 12 tippers/dump trucks of 3.5 m<sup>3</sup> capacity and 15 secondary vehicles. For service improvement and to reduce operating cost of the transport vehicle, LSMC can handed over such transport vehicle to private operators.
- vi. The cost of service provision of LSMC has been increased from 90.6 Lakhs in 20012/13 to a budgeted 95.0 Lakhs in 2014/15. Through involvement of private sector in solid waste management related activities, LSMC's strategy should be reducing its yearly budget gradually and start generating revenue (within 3-5 years). In order to achieve this target and to strengthen capacity and to attract the private sector, the municipality may also provide some subsidy to private sector at initial stage/year. This will also need to be reflected in subsidy for households that practice waste reduction and segregation options.
- vii. There is no any formal relationship existed between LSMC and the private operators, community organizations/NGOs, however, they are providing services. Hence, it is essential for LSMC to formally recognize the service providers. For this, LSMC is required to develop a private sector involvement (or PPP) guideline considering the existing legal framework and to follow the procurement procedure as outlined in figure 1.

# ***Attachment-9***

***General Cost Model***

**Pokhara**

**ASSETS**

Input data based on current year

Value in NPR

Useful life in years

**EXISTING ASSETS**

Disposal facilities (1...3)	Disposal facility - Total	Transfer station	Landfill
Current value	5,000,000	5,000,000	?
Salvage value	100,000	100,000	
Useful life	5	5	

Current value	20%
Current value	50%

Number of vehicles	12	4	1
Price of vehicles	-	-	-

Vehicle (1...10)	Vehicle - Total	Small tipper	Big tipper	Dozer	Tipper 2	Tipper 3	Tipper 4	Tipper 5	Tipper 6	Tipper 7	Compactor 1	Compactor 2	Compactor 3	Compactor 4	Compactor 5	Compactor 6
Current value	1,600,000	-	-	-							800,000	800,000				
Average salvage value	32,000	-	-	-							16,000	16,000				
Average useful life	5	5	5	6							5	5				

Other (1, 2)	Other - Total	Other 1
Current value		
Average salvage value		
Average useful life		

**NEW ASSETS**

Disposal facilities	Total Y1	Total Y2	Transfer station (year 2)	Transfer station improvements - simple MRF (year 1)	Construction Waste Recycling
Current value	5,000,000	33,000,000	30,000,000	5,000,000	3,000,000
Salvage value	250,000	1,650,000	1,500,000	250,000	150,000
Useful life	10	10	10	10	10

Vehicles	Total Y1	Total Y2	Total Y3	Total Y4	Number of vehicles									
					Large tipper (year 1)	Large tipper (year 2)	Large tipper (year 3)	Compactor (year 4)	Small compactors	Small narrow	Streetsweeping	Loader (year 1)	Loader (year 2)	Landfill loader (year 1)
Current value	67,700,000	12,500,000	-	-	8,000,000	8,000,000	-	-	40,000,000	5,200,000	10,000,000	4,500,000	4,500,000	8,000,000
Average salvage value	3,110,000	-	-	-					2,000,000	260,000		225,000	225,000	400,000
Average useful life	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Other	Total Y1	Total Y2	Total Y3	Total Y4	Bins - segregation	Bins - composting	Gloves/masks
Current value	4,575,000	4,575,000	4,575,000	4,575,000	7,500,000	10,800,000	
Average salvage value	-						
Average useful life	1.00	1	1	1	1		

Unit price (Rs)

Units	118,200,000	80,200,000	21,300,000
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**DHANKUTA**

**OTHER INPUT**

**MUNICIPALTY-SPECIFIC INPUTS**

Customers	year 0		year 1
	5-year growth rate	No. of customers	No. of customers
Hotels & Restaurants	9%	-	-
Industry	9%	-	-
Shops	9%	-	-
Households	9%	55,059	57,746

**CUSTOMER CLASSES AND SERVICE FEE**

Household	Year 0	year 1	
	No. of customers	No. of customers	Service fee (per year)
HHS	43,800	43,800	720

**Business**

**Main road area**

Industry	-	-	750
Shops	-	-	550
Hotels & Restaurants	-	-	2,250

Malls, hospitals and schools	100	100	20,000
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**RECYCLING**

Compost	Share in waste	Share segregated	Unit price pr. kg
Normal compost bags	45%	0%	
Normal compost truck loads		0.0%	12
Organic compost bags		0.0%	5
		0.0%	24

**Recyclable materials**

Paper	0%	0.0%	3
Plastic	0%	0.0%	5
Metal	0%	0.0%	10

**WASTE GENERATION**

Population in service area	250,000	296,226
Waste generation per capita per day (kg)	0.37	0.37
Growth in waste generation	0	
Level of home composting of organic material of which actually collected	91%	81%

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Assumed tarif collection ratio (%)						

<b>CAPITAL COSTS</b>	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
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Private operator costs						
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<b>O&amp;M COSTS</b>	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
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**Labor**

Staff /customer ratio %	0.75%
Number of staff	206
Wages @ multiple of min. wage	1.8

**Equipment fuel and periodic maintenance**

Route Km / (scales with customers)	645
Liters / km	0.75
Retail diesel (NPR/liter at nearest depot)	Kathmandu
Periodic maintenance	10%

*Only diesel price data for Kathmandu available*

**Other O&M**

Landfill operating		5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
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<b>OVERHEAD AND OTHER COSTS</b>	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
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**Administration, billing and collection**

as % of O&M expenses	5%
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**Communications and outreach**

as % of O&M expenses	5%
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**FINANCING**

	2014/15
Government commitment (Rs)	86,100,000
Verified beneficiary revenue (Rs)	

**MACRO-DATA**

Financial inputs				Exchange rates				
Item	Value	Units	Notes		SDR	USD	NPR	Add...
Average 5 yr inflation	7.0%	% per yr	source: IMF predictions	SDR	1.000	1.456	144.183	
Nominal cost of debt	8.0%	% per yr	Approximate as TDF lending rate	USD	0.687	1.000	99.060	
Equity risk premium	500	[basis points]	Above cost of debt	NPR	0.007	0.010	1.000	
				Add...	-	-	-	1.000

Other cost data & assumptions			
Item	Value	Unit	Notes
Average wage	180,000	NPR/yr	
Bin replacement		years	estimated life
Bin cost		NPR / unit	
Equipment salvage	0.025		

Source: [http://www.imf.org/external/np/fin/data/rms\\_five.aspx](http://www.imf.org/external/np/fin/data/rms_five.aspx)  
 NOTE: updated 4 december 2014

Constants			
Item	Value	Unit	Notes
Service days / week	6	days	Saturdays off
Weeks / year	52	weeks	Continuous

Diesel Prices			
Depot	Price	Unit	Notes
Biratnagar	101.5	NPR/liter	
Kathmandu	101.5	NPR/liter	Price: 01.11.2014
Amlekhgunj	101.5	NPR/liter	
Birgunj	101.5	NPR/liter	
Bhairahawa	101.5	NPR/liter	
Pokhara	101.5	NPR/liter	
Nepalgunj	101.5	NPR/liter	
Dhangadi	101.5	NPR/liter	
Dipayal	101.5	NPR/liter	
Surkhet	101.5	NPR/liter	
Mahendranagar, Dhanusa	101.5	NPR/liter	
Dang	101.5	NPR/liter	
Charali, Jhapa	101.5	NPR/liter	

Source:

<http://www.nepaloil.com.np/Previous-Selling-Price/16/>

Available: 05.12.2014

	2011	2014a	2015	Persons/HH
Population	265,000	250,000	258,000	4.15
Instant increase in service area			38,226	
Total	265,000	250,000	296,226	
Households	63,855	60,241	71,380	
Costumers (HH)		58,400		97%

	2012	2014a	2014b	Tarif
Hotels	646			2,500
Restaurants	1,200			2,000
Industry	1,248			750
Shops	7,050			550

Operator	Customers (households excluding VDCs)	Waste collected in LSMC (tons/day)	Share of waste recycled/recovered (tons/day)	Share of waste recycled/recovered (% of collected)
LSMC	43,800	55	10	18%
NEPSEMAC	5,800	20	2	10%
Sirjansil	2,000	6	2	33%
WEPCO	1,800	4	2	50%
NEPCO	1,600			
14 small operators	3,400			
Total	58,400	85	16	19%

Total			kg pr/capita		Collection efficiency	Collection efficiency Target?
Total waste generated	93	110.446 MT/day	0.37	0.37	year 0	91% 95%
Total waste collected - old areas	85	89.35 MT/day		0.33	year 1	81% 90%
Total waste collected - old + new areas		MT/day		0.33		9%
Total waste at landfill		MT/day		-		88.35
Recycled (private)		MT/day		-		99.4014
Dump (private)		MT/day		-		

Operator	The tariff collection efficiency (%)	Tariff revenues (NRP/year)	Total billed revenue	PSMC - tariff share	NRP/hh/year
LSMC	2%	2,000,000	88,100,000	100%	2,000,000
NEPSEMAC	102%	20,880,000	20,560,000	20%	4,176,000
Sirjansil	77%	5,600,000	7,300,000	20%	1,120,000
WEPCO	103%	2,400,000	2,340,000	20%	480,000
		30,880,000	118,300,000	PSMC tariff revenue	7,776,000
					169

Operator	The tariff collection efficiency (%)	Tariff revenues (NRP/year)	Total billed revenue	PSMC - tariff share
LSMC	2%	2,000,000	88,100,000	100%
NEPSEMAC	102%	20,880,000	20,560,000	20%
Sirjansil	77%	5,600,000	7,300,000	20%
WEPCO	103%	2,400,000	2,340,000	20%
		30,880,000		PSMC tariff revenue
				7,776,000

Operator	Salary and benefits (NRP/year)	Material and supplies (NRP/year)	Fuel and lubricants (NRP/year)	Total cost of SWM (NRP/year)	Govrn. commitment
PSMC (only own collection area)	67,100,000	5,000,000	16,000,000	88,100,000	86,100,000

ASSETS	0	1	2	3	4	5
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**EXISTING ASSETS**

<b>Disposal facilities</b>						
<b>Disposal facility total</b>	5,000,000	4,020,000	3,040,000	2,060,000	1,080,000	100,000
Salvage value						
Useful life						
Depreciation in period	-980,000	-980,000	-980,000	-980,000	-980,000	-980,000
<b>Disposal facilities (1, 2)</b>						
<b>Disposal facility 1</b>	5,000,000	4,020,000	3,040,000	2,060,000	1,080,000	100,000
Salvage value						
Useful life						
Depreciation in period	-980,000	-980,000	-980,000	-980,000	-980,000	-980,000
<b>Disposal facility 2</b>	?	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Salvage value						
Useful life						
Depreciation in period	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
<b>Opening net asset value (1-3)</b>	5,000,000	4,020,000	3,040,000	2,060,000	1,080,000	100,000
<b>Depreciation expense in period (1-3)</b>	-980,000	-980,000	-980,000	-980,000	-980,000	-980,000

<b>Vehicle (1...10)</b>						
<b>Vehicle total</b>	1,600,000	1,298,462	996,923	695,385	393,846	92,308
Average salvage value						
Average useful life						
Depreciation in period	-301,538	-301,538	-301,538	-301,538	-301,538	-301,538
<b>Vehicle (1-10)</b>						
<b>Vehicle 2</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 3</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 4</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 5</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 6</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 7</b>						
Average salvage value	-	-	-	-	-	-
Average useful life						
Depreciation in period	-	-	-	-	-	-

<b>Vehicle 8</b>	-	-	-	-	-	-
Average salvage value						
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 9</b>	-	-	-	-	-	-
Average salvage value						
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Vehicle 10</b>	-	-	-	-	-	-
Average salvage value						
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Opening net asset value (1-10)</b>	1,600,000	1,298,462	996,923	695,385	393,846	92,308
<b>Depreciation expense in period (1-10)</b>	-301,538	-301,538	-301,538	-301,538	-301,538	-301,538
<b>Other (1-2)</b>						
Other total	-	-	-	-	-	-
Average salvage value						
Average useful life						
Depreciation in period	-	-	-	-	-	-
Other 1	-	-	-	-	-	-
Average salvage value						
Average useful life						
Depreciation in period	-	-	-	-	-	-
<b>Opening net asset value (1-2)</b>	-	-	-	-	-	-
<b>Depreciation expense in period (1-2)</b>	-	-	-	-	-	-
<b>NEW ASSETS (INVESTMENTS)</b>						
<b>Disposal facilities</b>						
Value	-	-5,000,000	-33,000,000			
Asset open balance	-	5,000,000	34,390,000	30,780,000	27,170,000	23,560,000
Salvage value						
Useful life						
Depreciation in period		-3,610,000	-3,610,000	-3,610,000	-3,610,000	-3,610,000
<b>New vehicles</b>						
Value	-67,700,000	-12,500,000	-	-	-	-
Asset open balance	67,700,000	73,741,000	72,491,000	72,691,000	72,917,000	72,917,000
Salvage value	3,110,000	-	2,000,000	2,260,000		
Useful life	10	10	10	10		
Depreciation in period	-6,459,000	-1,250,000	200,000	226,000		
<b>Other</b>						
Value	-4,575,000	-4,575,000	-4,575,000	-4,575,000		
Asset open balance	4,574,999	9,149,999	13,724,999	18,299,999	18,299,999	18,299,999
Salvage value						
Useful life						
Depreciation in period	-4,575,000	-4,575,000	-4,575,000	-4,575,000	-4,575,000	-4,575,000
Opening net asset value	77,274,999	117,280,999	116,995,999	118,160,999	114,776,999	
Depreciation expense in period	-14,644,000	-9,435,000	-7,985,000	-7,959,000	-8,185,000	
<b>TOTAL ASSETS (EXISTING + NEW)</b>						
<b>Opening net asset value</b>	<b>6,600,000</b>	<b>82,593,461</b>	<b>121,317,922</b>	<b>119,751,384</b>	<b>119,634,845</b>	<b>114,969,307</b>
<b>Depreciation expense in period</b>	<b>-1,281,538</b>	<b>-15,925,538</b>	<b>-10,716,538</b>	<b>-9,266,538</b>	<b>-9,240,538</b>	<b>-9,466,538</b>

GENERAL COST MODEL	Unit	0	1	2	3	4	5	Yr 1-4, total
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### MUNICIPALTY-SPECIFIC & OTHER INPUTS

<b>Prices</b>								
Inflation index @ 7%		1.00	1.07	1.14	1.23	1.31	1.40	
<b>Customers</b>								
Hotels and Restaurants	#	-	-	-	-	-	-	1.018
Industry	#	-	-	-	-	-	-	1.018
Shops	#	-	-	-	-	-	-	1.018
HHs	#	55,059	57,746	58,760	59,793	60,844	61,913	1.018
No. of customers	#	55,059	57,746	58,760	59,793	60,844	61,913	

### CAPITAL COSTS

<b>1) Return on asset base</b>								
Net value of existing asset base (beginning )		6,600,000	82,593,461	121,317,922	119,751,384	119,634,845	114,969,307	
Cost of TDF debt	% per yr	8%	8%	8%	8%	8%	8%	
Subtotal 1)		-528,000	-6,607,477	-9,705,434	-9,580,111	-9,570,788	-9,197,545	-35,463,809
<b>2) WC and newly developed assets</b>								
Working capital (6 mnths projected ben. rev.)		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Newly developed assets			77,275,000	50,075,000	4,575,000	4,575,000		
Cost of TDF + Equity Risk Premium		13%	13%	13%	13%	13%	13%	
Subtotal 2)		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
<b>3) Return of Capital</b>								
Depreciation		-1,281,538	-15,925,538	-10,716,538	-9,266,538	-9,240,538	-9,466,538	
Subtotal 3)		-1,281,538	-15,925,538	-10,716,538	-9,266,538	-9,240,538	-9,466,538	-45,149,154
<b>4) Tipping fees (if any)</b>								
<b>Total capital costs (1+2+3+4)</b>		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
<b>Total capital costs (1+2+3+4), USD</b>		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!

### O&M COSTS

<b>5) Labor</b>								
	Improvement							
Staff /customer ratio (staff/1000 customers)		3.7	3.7	3.7	3.7	3.7	3.7	
Number of staff		206	216	220	224	228	232	
Wages @ multiple of min. wage		324,000	346,680	370,948	396,914	424,698	454,427	
Subtotal 5)		-66,744,000	-74,901,025	-81,552,462	-88,794,566	-96,679,792	-105,265,248	
<b>6) Equipment fuel and periodic maintenance</b>								
Route Km / (scales with customers)		201,240	211,060	214,769	218,543	222,384	226,291	
Liters / km		0.75	0.75	0.75	0.75	0.75	0.75	
Retail diesel (NPR/liter at nearest depot)		101.5	108.6	116.2	124.3	133.0	142.4	

Periodic maintenance	-1,531,940	-1,719,163	-1,871,830	-2,038,054	-2,219,040	-2,416,097	
Subtotal 6)	-16,851,335	-18,910,797	-20,590,133	-22,418,599	-24,409,438	-26,577,069	
<b>7) Other O&amp;M</b>							
Private operator costs	-	-	-	-	-	-	
Landfill operating	-5,000,000	-5,000,000	-5,000,000	-5,000,000	-5,000,000	-5,000,000	
Subtotal 7)	-5,000,000	-5,000,000	-5,000,000	-5,000,000	-5,000,000	-5,000,000	
<b>Total O&amp;M costs (5+6+7)</b>	-88,595,335	-98,811,822	-107,142,595	-116,213,165	-126,089,229	-136,842,318	-448,256,811
<b>Total O&amp;M costs (5+6+7), USD</b>	-894,363	-997,497	-1,081,596	-1,173,162	-1,272,861	-1,381,412	-4,525,116

**OVERHEAD AND OTHER COSTS**

<b>8) Administration, billing and collection</b>							
as % of O&M expenses	-4,429,767	-4,940,591	-5,357,130	-5,810,658	-6,304,461	-6,842,116	
Subtotal 8)	-4,429,767	-4,940,591	-5,357,130	-5,810,658	-6,304,461	-6,842,116	-22,412,841
<b>9) Communications and outreach</b>							
as % of O&M expenses	-4,429,767	-4,940,591	-5,357,130	-5,810,658	-6,304,461	-6,842,116	
Subtotal 9)	-4,429,767	-4,940,591	-5,357,130	-5,810,658	-6,304,461	-6,842,116	-22,412,841
<b>Total overhead and other costs (8+9)</b>	-8,859,533	-9,881,182	-10,714,259	-11,621,316	-12,608,923	-13,684,232	-44,825,681
<b>Total overhead and other costs (8+9), USD</b>	-89,436	-99,750	-108,160	-117,316	-127,286	-138,141	-452,512

<b>TOTAL COST OF SERVICE PROVISION</b>	#REF!						
<b>TOTAL COST OF SERVICE PROVISION, USD</b>	#REF!						

**REVENUE COLLECTION**

<b>Customers</b>							
<b>Household</b>							
HHs	43,800	43,800	44,797	45,793	46,790	47,786	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
0	-	-	-	-	-	-	
0	-	-	-	-	-	-	
<b>Business</b>							
Main road area							
Industry	-	-	-	-	-	-	
Shops	-	-	-	-	-	-	
Hotels & Restaurants	-	-	-	-	-	-	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
0	-	-	-	-	-	-	
Malls, hospitals and schools	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
0	-	-	-	-	-	-	
<b>Service fees</b>							
<b>Household</b>							

HHs	-	720	792	871	958	1,054
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0	-	-	-	-	-	-
0	-	-	-	-	-	-
<b>Business</b>						
Main road area						
Industry	750	825	908	998	1,098	1,208
Shops	550	605	666	732	805	886
Hotels & Restaurants	2,250	2,475	2,723	2,995	3,294	3,624
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0						
Malls, hospitals and schools	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
0	-	-	-	-	-	-
BILLED REVENUE - PSMC	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
COLLECTED REVENUE - PSMC	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
<b>RECYCLING REVENUES</b>						
Population in area	250,000	296,226	314,522	332,818	351,115	323,185
Waste generation (kg/pop/day)	0.37	0.37	0.37	0.37	0.37	0.37
Waste available for collection (MT/day)	93.00	110.45	117.27	124.09	130.91	120.50
Waste collected (MT/day)	85.00	89.35	94.87	100.39	105.91	97.48
<b>Compost</b>						
Normal compost bags	-	-	-	-	-	-
Normal compost truck loads	-	-	-	-	-	-
Organic compost bags	-	-	-	-	-	-
<b>Recyclable materials</b>	-	-	-	-	-	-
Paper	-	-	-	-	-	-
Plastic	-	-	-	-	-	-
Metal	-	-	-	-	-	-
<b>RECYCLING REVENUES</b>						

Private Sector

Off



**Billed revenue**

NEPSEMAC	20,560,000	20,560,000	22,616,000	24,877,600	27,365,360	30,101,896
Sirjansil	7,300,000	7,300,000	8,030,000	8,833,000	9,716,300	10,687,930

WEPCO	2,340,000	2,340,000	2,340,000	2,340,000	2,340,000	2,340,000
Tariff collection efficiency						
NEPSEMAC	102%	102%	102%	102%	102%	102%
Sirjansil	77%	77%	77%	77%	77%	77%
WEPCO	103%	103%	103%	103%	103%	103%
<b>Collected Revenue</b>						
NEPSEMAC	20,880,000	20,880,000	25,264,800	27,791,280	30,570,408	33,627,449
Sirjansil	5,600,000	5,600,000	6,776,000	7,453,600	8,198,960	9,018,856
WEPCO	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
<b>PSMC share of private sector revenue</b>						
NEPSEMAC	0%	0%	0%	0%	0%	0%
Sirjansil	0%	0%	0%	0%	0%	0%
WEPCO	0%	0%	0%	0%	0%	0%

<b>Tariff levels</b>						
NEPSEMAC	0%	10%	10%	10%	10%	10%
Sirjansil	0%	10%	10%	10%	10%	10%
WEPCO	0%	10%	10%	10%	10%	10%

#### Financing

Financing	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5 (post subsidy)	Yr. 1-4 Total USD eq.
Passing technical scorecard	No	Yes	Yes	Yes	Yes	Yes	
Cost recovery target (%)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
Government contribution (%)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
Annual Subsidy Multiplier (ASM)	0.00	#REF!	#REF!	#REF!	#REF!	0.00	
<b>TOTAL Cost of Services (NPR Lakh)</b>	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
<b>Paid for by...</b>							
Government commitment (negotiated)	861.0	921.3	985.8	1,054.8	1,128.6	1,207.6	4,129,212
Verified beneficiary revenue (negotiated)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
OBA subsidy		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Unmet funding gap (reflected in poor quality)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
<b>Minimum fee (NPR/year)</b>	<b>Yr 0 (baseline)</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5 (post subsidy)</b>	
<b>Verified beneficiary revenue (NPR)</b>	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
1) Revenue from recycling	-	-	-	-	-	-	
2) Revenue from collection fee	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
Changes in tariff level	0%	10%	10%	10%	10%	10%	
Assumed tariff collection ratio		20%	25%	30%	35%	40%	

Billed revenue	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Collected revenue	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!

NEGOTIATION MATRIX	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5 (post subsidy)
Cash expenditures in year under SWM-SIP (Rs Lakh)	886	1,659	1,572	1,208	1,307	1,368
Model Total Cost of Services (Rs Lakh)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Paid for by...						
Government commitment (Rs Lakh)	861	921	986	1,055	1,129	1,208
Verified Beneficiary Revenue (Rs Lakh)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Net OBA Subsidy (Rs Lakh)		#REF!	#REF!	#REF!	#REF!	#REF!
Surplus/deficit	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Cost recovery target - Model Total Costs (%)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Cost recovery target - Cash Expenditures (%)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Cost recovery target - O&M Costs (%)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
<b>Annual Subsidy Multiplier (ASM)</b>		#REF!	#REF!	#REF!	#REF!	#REF!
<b>Maximum Subsidy (Rs Lakh)</b>		#REF!	#REF!	#REF!	#REF!	#REF!
Assumed change in tariff level		10%	10%	10%	10%	10%

Updated in SIP	
Lalitpur	#REF!
Pokhara	991
Ghorahi	401
Dhankuta	111
Tansen	176
<b>Total</b>	<b>#REF!</b>

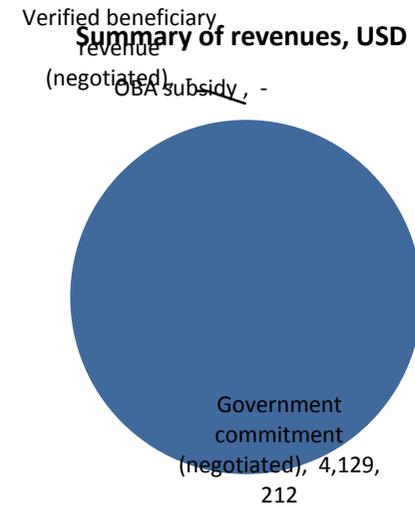
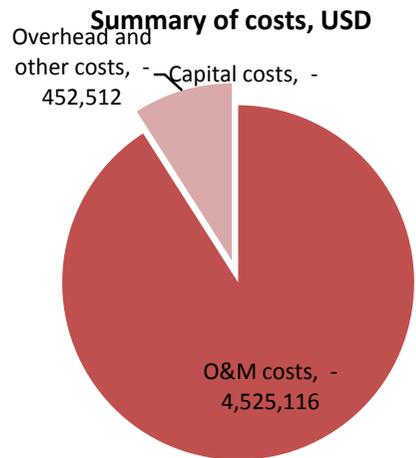
et mentioned in Project docu  
**3013.381**  
**Difference** #REF!  
Lekhanath 189  
#REF!

Summary of costs, USD	
Capital costs	#REF!
O&M costs	-4,525,116
Overhead and other costs	-452,512

#REF!

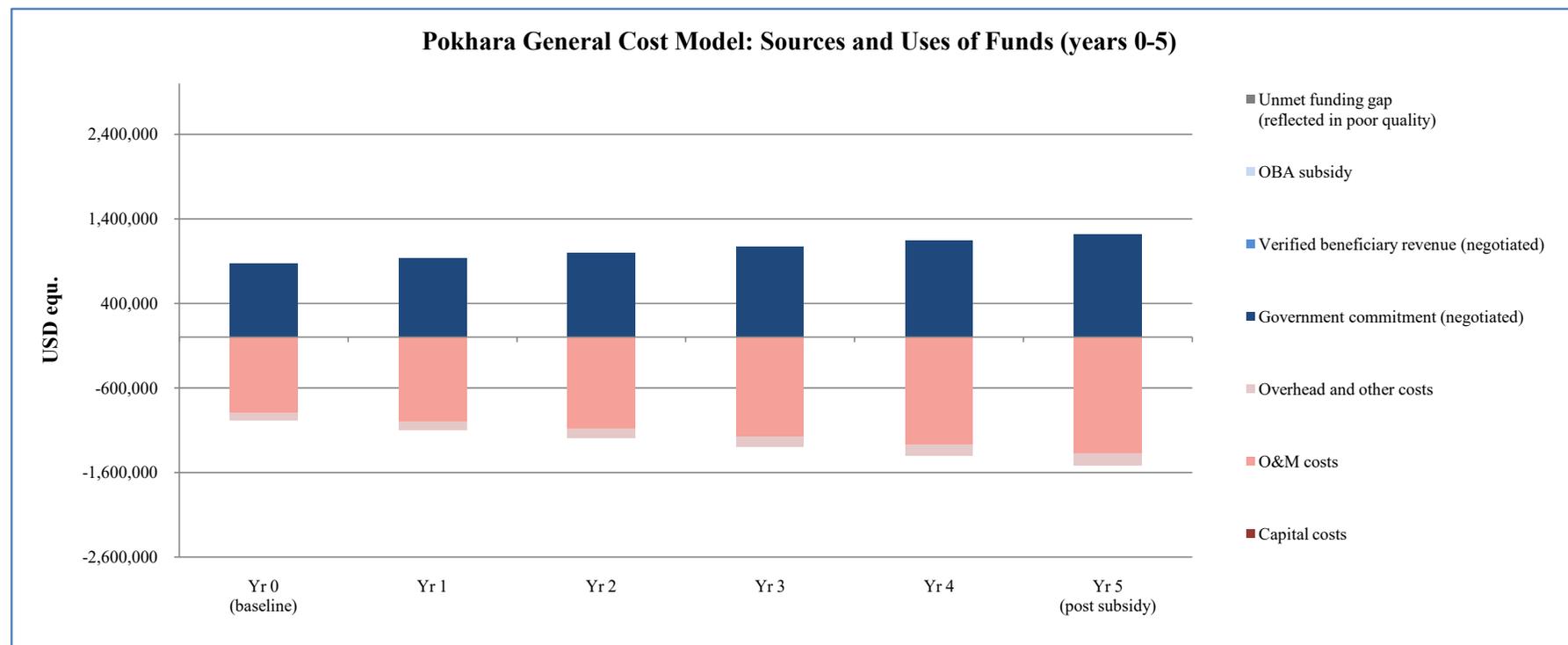
Summary of revenues, USD	
Government commitment (negotiated)	4,129,212
Verified beneficiary revenue	#REF!
OBA subsidy	#REF!

#REF!



	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5 (post subsidy)	Yr 5 (post subsidy)
Capital costs	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
O&M costs	-894,363	-997,497	-1,081,596	-1,173,162		-1,272,861	-1,381,412
Overhead and other costs	-89,436	-99,750	-108,160	-117,316		-127,286	-138,141
Government commitment (negotiated)	869,173	930,015	995,116	1,064,774		1,139,308	1,219,059
Verified beneficiary revenue (negotiated)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
OBA subsidy	-	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Unmet funding gap (reflected in poor quality)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Inflation index @ 7%	1.00	1.07	1.14	1.23		1.31	1.40

Pokhara General Cost Model: Sources and Uses of Funds (years 0-5)



# **Attachment-10**

***Tripartite Agreement***

# Tripartite Agreement

on

## Project Implementation

for

### Output-Based Aid in Municipal Solid Waste Management

in

#### Lalitpur Sub-Metropolitan city

Municipality : Lalitpur Sub-Metropolitan city  
Project name : The Output-Based Aid in Municipal Solid Waste Management in Nepal Project  
Project code No. : TFOL3464

Agreement Date: 2071/12/15(29 March 2015)

Among,

#### Lalitpur Sub-Metropolitan city

Lalitpur

Post Box:# 8260

Tel. # 01-5540904, 01-5540905

FAX # 01-5521495

Email #

Website # lalitpur.org.np

(Herein after referred to as the "Participating Municipality"); and

#### Town Development Fund

New Baneshwor, Kathmandu

Post Box # 5144

Tel. # 01-44 93 866, 01-44 64 874

(Herein after referred to as the "TDF"); and

#### Solid Waste Management Technical Support Centre

Tel. # 01-5544404

Fax # 01-5544405

Email # swmrnc1@gmail.com

Website # www.swmtsc.gov.np

(Herein after referred to as the "SWMTSC")



## Article-1

### Scope of Agreement

- 1.01 The Tripartite Project Implementation Agreements (TPIAs) between TDF, SWMTSC and the Participating Municipality describes:
- 1.01.1 The roles and responsibilities of TDF, SWMTSC and the Participating Municipality.
  - 1.01.2 The procedures for OBA subsidy calculation and disbursement.
  - 1.01.3 The role of the ITVA and the IFVA in verification of outputs.
  - 1.01.4 The required reporting arrangements by the Participating Municipality under the project.

## Article-2

### Conditions Precedent

2.01 Commencement and Termination

This Agreement shall be deemed to have come into force on the date of signature subject to the following conditions precedent:

- 2.01.1 The signature of the grant agreement between the World Bank and the Ministry of Finance
- 2.01.2 The signature of the Subsidiary Agreement between the Ministry of Finance and the TDF.
- 2.01.3 The Signature of the Memorandum of Understanding between SWMTSC and TDF.
- 2.01.4 The Participating Municipality has submitted required documents to confirm their eligibility for participating in the project and signed a letter of commitment.

## Article-3

### Obligations of the TDF

3.01 The TDF shall:

- 3.01.1 Pay Service Delivery Subsidies to Participating Municipalities based on agreed annual multiples of verified Beneficiary Revenue collected, provided that solid waste management services meet verified minimum performance criteria on the Technical Scorecard.
- 3.01.2 Contract required consultants for performing the tasks as mentioned in Project Operational Manual.



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*[Handwritten signature]*



- 3.01.3 Provide pre-financing to participating municipalities, if required, via the Advances Facility under terms agreed with MoF.
- 3.01.4 Ensure compliance with the Financial Management and Disbursement guidelines for the OBA project.
- 3.01.5 Monitor compliance with the Results Framework and Monitoring guidelines for the OBA project.
- 3.01.6 Contract the ITVA and IFVA to perform the independent verification of delivered outputs as basis for OBA subsidy disbursement.
- 3.01.7 Oversee timely financial verification by the IFVA and review verification reports submitted by IFVA.
- 3.01.8 Monitor procurement under the project.
- 3.01.9 Monitor compliance with the ESMF with support of SWMTC.
- 3.01.10 Conduct audit of the project as per grant agreement.
- 3.01.11 Advise the Participating Municipality as needed on the financial management aspects of solid waste management services. This will include particular attention on billing, collection, and tariff management.
- 3.01.12 Call and host quarterly meetings with Participating Municipalities and the SWMTSC.
- 3.02 TDF shall not:
- 3.02.1 Attempt to influence or otherwise bias the activities of the ITVA or IFVA.
- 3.02.2 Pay subsidies unless the ITVA and IFVA have satisfactorily verified Participating Municipality performance.
- 3.02.3 Pay subsidies according to any other formula not explicitly mentioned in the TPIA.
- 3.02.4 Withhold or otherwise delay payment of subsidies that a Participating Municipality has earned. The exception to this principle shall occur when a Participating Municipality has drawn pre-financing from the Advances Facility and has pledged subsidies earned to secure repayment.
- 3.02.5 Require any form of payment from the Participating Municipalities for subsidy disbursements, or reviews by the ITVA or IFVA.



## Article-4

### Obligations of the SWMTSC

4.01 The SWMTSC shall:

- 4.01.1 Contract technical assistance providers to assist municipalities with implementation. For the avoidance of doubt, technical assistance providers shall owe their duty of care to the Participating Municipalities.
- 4.01.2 Advise the Participating Municipalities on area of priorities for service improvement.
- 4.01.3 Advise Participating Municipalities on service delivery models and billing and collection strategies.
- 4.01.4 Review SWM-SIP, service delivery model, billing and collection strategy and baseline data for Technical Scorecard provided by Participating Municipalities.
- 4.01.5 Inform Participating Municipalities on the methodology for determining subsidy amounts under the OBA project.
- 4.01.6 Advise Participating Municipalities on methodologies for the determination of their SWM fee structure.
- 4.01.7 Advise the Participating Municipalities on individual implementation plan for the OBA project including annual targets under Technical Scorecard, government contribution, cost recovery targets, planned tariff increases and agree on resulting Annual Subsidy Multiplier.
- 4.01.8 Monitor and quality assure the implementation of the SWM-SIP and the performance of the OBA project in the Participating Municipalities.
- 4.01.9 Support municipalities to ensure compliance with the Environmental and Social Management Framework for the OBA project.
- 4.01.10 Oversee timely technical verification by the ITVA and review verification reports submitted by ITVA.
- 4.01.11 Supervise consultants for Technical Assistance to municipalities
- 4.01.12 Call and host quarterly meetings with Participating Municipalities and the TDF.

4.02 SWMTSC shall not:

- 4.02.1 Attempt to influence or otherwise bias the activities of the ITVA or IFVA.
- 4.02.2 Require any form of payment from the Participating Municipalities for Technical Assistance Services or reviews by the ITVA or IFVA.
- 4.02.3 Withhold or otherwise delay the provision of technical assistance services to municipalities unless for performance reasons agreed in the TPIA.



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## Article-5

### Obligations of the Participating Municipality

5.01 The Participating Municipality shall:

- 5.01.1 Define and agree priority areas for service improvement in consultation with SWMTSC.
- 5.01.2 Prepare and submit SWM-SIP to SWMTSC and TDF
- 5.01.3 Formulate a SWM committee responsible for monitoring and evaluation of Project activities within the Municipality and establish a dedicated SWM Unit responsible for day to day provision of solid waste management services.
- 5.01.4 Establish and maintain separate account for SWM services.
- 5.01.5 Prepare in consultation with SWMTSC on individual implementation plan for the OBA project including annual targets under Technical Scorecard, government contribution, cost recovery targets, planned tariff increases and agree on resulting Annual Subsidy Multiplier.
- 5.01.6 Draw from Advances Facility if required for pre-financing project expenditures against security in future OBA subsidy revenues and unconditional grants from the Ministry of Finance.
- 5.01.7 Implement service improvements under the OBA project in accordance with the SWM-SIP, the provisions of the Environmental and Social Management Framework, and all plans prepared thereunder, and any additional social and environmental safeguard measures described in the Project Operations Manual.
- 5.01.8 Communicate with TLOs and Beneficiaries.
- 5.01.9 Contract services of TLOs or Private Sector / NGOs if envisioned under the planned service delivery model.
- 5.01.10 Procure equipment (vehicles, waste collection bins) if required only.
- 5.01.11 Facilitate ITVA and IFVA independent verification missions by coordinating with SWMTSC.
- 5.01.12 Request TDF to initiate OBA Subsidy Transfer upon reception of acceptable Verification Report from the ITVA and IFVA.
- 5.01.13 Follow up on any issues raised by the ITVA and IFVA in the Verification Report.
- 5.01.14 Prepare and submit progress reports to SWMTSC and TDF.
- 5.01.15 Form a taskforce to support SWM unit in implementing OBA project and designate a member of taskforce as a focal person.



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5.01.16 Attend and participate in the quarterly meetings and other meetings called by SWMTSC, and TDF.

5.02 Participating Municipalities shall not:

5.02.1 Give false information to SWMTSC, TDF, the ITVA, or the IFVA. Attempt to influence or otherwise bias the activities of the ITVA or IFVA.

5.02.2 Unilaterally change SWM-SIPs during the project implementation period without notification, and consultation, with SWMTSC and TDF.

5.02.3 Use OBA subsidies earned for any other purposes, other than to improve solid waste services in the municipality.

## Article-6

### Specific Conditions

6.01 OBA Subsidy Disbursement

6.01.1 The Participating Municipalities will only be eligible to earn up to a maximum Output-based Service Delivery Subsidy in any given year regardless of the amount of verified Beneficiary Revenue collected.

6.01.2 No Participating Municipality shall receive an Output-based Service Delivery Subsidy unless and until the TDF has received a Technical Verification Report, acceptable to the Project Implementing Entity (TDF), and the World Bank, showing that the Municipality has achieved the required minimum service performance.

6.02 Technical Assistance

6.02.1 After the First Year, no Participating Municipality shall receive any technical assistance under Component 2 of the Project unless and until the Project Implementing Entity has received at least one Technical Verification Report, acceptable to the Project Implementing Entity, and the World Bank, showing that the Municipality has achieved the required minimum service performance as specified in the Schedules.

## Article-7

### Miscellaneous

7.01 Any notice, request, etc. to be exchanged between the TDF, the SWMTSC, and the Participating Municipality under this Agreement shall be made in writing. Such notice and request shall be deemed to have been given or made to the party required or said to have

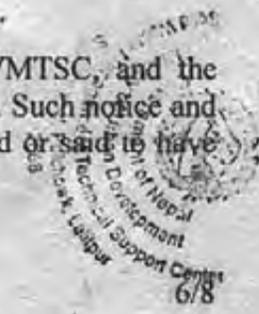


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been made or given if it is given or delivered at the following address or at any other address specified by a prior notice.

**For the TDF**

Executive Director

Town Development Fund

New Baneshwor, Kathmandu, Nepal

**For the SWMTSC**

Executive Director

Solid Waste Management Technical Support Centre

Shree Mahal, Pulchowk, Lalitpur, Nepal

**For the Participating Municipality**

Chief Executive Officer

Lalitpur Sub-Metropolitan city

This Memorandum of Agreement has been duly signed in three originals by all three parties hereto acting through their duly authorized representatives, at the SWMTSC, Lalitpur on 29 th March 2015.

We understand and agree to the terms and conditions set out above.



**Dr. Sumitra Amatya**  
**Executive Director**  
**SWMTSC**



**Sushil Gyawali**  
**Executive Director**  
**Town Development Fund**



**Tara Bahadur karki**  
**Chief Executive Officer**  
**Lalitpur Sub-Metropolitancity**

Date: 29 th March 2015

Date: 29 th March 2015

Date: 29th March 2015

Witnesses

**On behalf of SWMTSC**

**On behalf of TDF**

**On behalf of Participating Municipality**

**Name: Dipendra Bahadur Oli**

**Name: Maniram Singh Mahat**

**Name: Pradeep Amatya .**

**Signature:**



**Signature:**



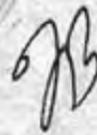
**Signature:**



Date: 29 th March 2015

Date: 29 th March 2015

Date: 29 th March 2015



- ANNEXES : ONE: PROJECT OPERATIONS MANUAL (Nepali version)  
TWO: TECHNICAL SCORECARD BASELINE DATA  
THREE: OBA SUBSIDY CALCULATION AND DISBURSEMENT  
FOUR: VERIFICATION AND DISBURSEMENT PROCEDURES  
FIVE: REPORTING FORMATS  
SIX: THE SWM-SIP ESTABLISHED FOR THE PARTICIPATING MUNICIPALITY  
SEVEN: THE AGREED IMPLEMENTATION PLAN FOR THE OBA PROJECT IN THE INDIVIDUAL MUNICIPALITY



# TPIA Annex 2 – Lalitpur Technical Scorecard Baseline and Targets

#	KPI	Verifiable indicator	Target Values by Year
			Baseline
			1
			2
			3

## SWM strategy and action plan KPIs

1.1	SWM Subject Committee <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. <b>NOTE:</b> approved SWM-SIPs should include committee TOR.</p> <p><b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.</p>	A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers has been established and usually convenes on a monthly basis.	Pass	Pass	Pass	Pass
1.2	Section/unit of municipality tasked with overseeing SWM <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP.</p> <p><b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.</p>	At the operational level, the Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects.	Pass	Pass	Pass	Pass
1.3	SWM-SIP review and up-to-date <i>(binary pass / fail)</i>	<p><b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.</p>	NA	Pass	Pass	Pass	Pass

  
 Technical Development  
 Municipal Technical Support Center  
 Lalitpur, Nepal  
 2069

  
 Lalitpur Sub-Metropolitan City  
 Panchhak, Lalitpur

  
 Technical Development Center  
 Nepal

1.4 Enabling PPP in MSW	<p><b>Year -1</b> 1.) Municipality prepares and approves formal strategy/policy on and practical guideline for involvement of private enterprises, NGOs and TLOs in waste management.</p> <p>2.) Municipality works with SWMTSC on establishing (improving existing) contracts private operators.</p> <p><b>Year -2</b> 1.) Municipality establishes regulation on the (maximum) size of tariffs collected by private enterprises and NGOs involved in waste collection.</p> <p>2.) Municipality establishes monitoring system for private operator service delivery in accordance with contract.</p> <p><b>Year -2-4</b> 1.) System for data collection on or self-reporting by private enterprises, NGOs and TLOs involved in MSW established.</p>	<p>Collection services are provided by LSMC in 11 wards and by private service providers in 11 wards</p> <p>There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC</p>	Pass	Pass	Pass	Pass
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**Performance monitoring KPIs**

2.1 Landfill operations and waste reduction (binary pass / fail)	<p><b>Year 1:</b> Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives 'no objection.'</p> <p><b>Years 2-4:</b> (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review.</p>	<p>All waste for disposal is transported to the Okharpauwalandfill which is operated jointly by Kathmandu and Lalitpur.</p> <p>There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility</p>	Pass	Pass	Pass	Pass
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Ministry of Urban Development and Construction, Lalitpur

Technical Support Center

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<p>2.2 Communications systems (binary pass / fail)</p>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality's SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address complaints). SWMTSC reviews communications system and gives 'no objection.' <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Years 2-4:</b> (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p>	<p>Communication with key stakeholders such as private sector organizations, women group, TLOs, NagarikSamaj (citizen forum) and NGOs is the responsibility of the Environment Section, which organizes quarterly stakeholder meeting. The Environment Section head of LSMC is responsible for reporting to the municipal board.</p>	<p>Pass</p>	<p>Pass</p>
<p>2.3 Service delivery monitoring (binary pass / fail)</p>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard's service provision KPIs. <b>NOTE:</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its service delivery monitoring system with up-to-date data for all</p>	<p>The SWM service delivery monitoring is limited to monitoring of the vehicle log book and the waste collected from the specific route of that vehicle. However, in practice service is mainly evaluated based on cleanliness of streets and complain from nearby people.</p> <p>Vehicle use and fuel consumption is logged, but fuel provision by supervisor is based on normative consumption for specific route, and fuel efficiency is not monitored.</p>	<p>Pass</p>	<p>Pass</p>



Lalipur Sub-Metropolitan City  
Pulchowk, Nepal

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indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.

2.4	Fiduciary monitoring system <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (v) all financial indicators within the Technical Scorecard's Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives 'no objection.' <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its fiduciary monitoring system with up-to-date information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.</p>	Expenditure for repair and maintenance of vehicles, tools and equipment and fuel consumption is recorded by the Account Section of LSMC based on instructions by the Environment Section. The cost of landfill operation is handled by KMC, with LSMC providing the amount required by the Landfill Operation Unit and recommended by SWMTSC. All financial transactions are recorded at LSMC and audited as per government rule by internal and external auditor every year.	Pass	Pass	Pass
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**Service provision KPIs**

3.1- Wards served	% of wards within a municipality's area that are receiving regular SWM services. The data source for	Collection services are provided in the current 22urban wards (91% on average)	91% (old)	92% (old)	94% (old)	95% (old)
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<p>(% of municipal urban and peri-urban wards)</p>	<p>this indicator will be the municipality's service delivery monitoring system.</p> <p>Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.</p>	<p>with daily door-to-door by two private operators and bring to truck collection by LSMC.</p> <p>No service is provided in 3 new VDC included in Lalitpur as of January 2015.</p> <p>In all 25 wards average service is 81% at the start of 2015</p>	<p>81% (total)</p> <p>83% (total)</p> <p>87% (total)</p> <p>90% (total)</p>
<p>3.2 Visual cleanliness in public areas, main streets and secondary streets</p> <p>(% of wards receiving services)</p>	<p>Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.</p> <p>ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.</p>	<p>LSMC consider street cleaning as the prime function of the municipality to keep the city clean. It is the visible and significant symbol to demonstrate the city as clean city.</p> <p>Target: Street sweeping in core area and at main streets and public areas in other areas. No formal data is available but it is assessed that 75% of the area is clean.</p>	<p>80%</p> <p>85%</p> <p>90%</p> <p>95%</p>
<p>3.3 Customer Satisfaction</p> <p>(% of customers perceiving services delivered to SWM-SIP target standards)</p>	<p>% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.</p> <p>ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.</p>	<p>The municipality performs surveys of customer satisfaction with different services through the TLO representatives.</p> <p>Baseline and targets based on very satisfied + reasonable satisfied to be established.</p>	<p>70%</p> <p>75%</p> <p>80%</p> <p>85%</p>
<p>3.4 Safe disposal of collected waste</p> <p>(binary pass / fail)</p>	<p>Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm).</p>	<p>There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility</p>	<p>Pass</p> <p>Pass</p> <p>Pass</p> <p>-Pass</p>



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 Lalitpur Sub-Metropolitan City  
 Pulchowk, Lalitpur



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	<p>The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received.</p> <p>Illegal deposits at transfer stations of private operators are cleared (year 1).</p> <p>Percentage of households practicing proper and correct waste segregation at household level based on random inspection of 10% of households provided with bins for waste segregation and/or home composting.</p>	<p>A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households</p> <p>An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste</p>			
3.5	<p>Waste segregation and composting at household level</p>	<p>Targets are established and actual performance is measured (by visual inspection and check records) for recovery of recyclable material and organic fraction in waste stream at transfer stations and landfill (share of recoverable materials actually being separated and recovered/sold/reused).</p>		Pass	Pass
3.6	<p>Waste recovery</p>	<p>The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill.</p> <p>There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling. LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.</p>		Pass	Pass



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Financial KPIs



4.1	SWM fee collection efficiency (LSMC)	Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year.	Total tariff revenues collected in 2013/14 were NPR 20 Lakh. Expectations for 2015/16 are NPR 84 Lakh. The collection ratio for baseline is 20% for LSMC.	20%	25%	30%	35%
4.2	Increase in SWM fees charged (% increase on previous year)	Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.	LSMC collects 20 Lakh SWM fee (2013/14) from institutions, supermarkets and hospitals but did not collect a sanitation fee from households and small businesses in their service areas prior to the OBA project. This is equal to 2% cost recovery. Municipality will introduce SWM fees for households from 2015. Target is based on 2015/16 expectations of 84 Lakh and gradual increases thereafter.	84 Lakh	112 Lakh	144 Lakh	183 Lakh
4.3	Labor efficiency (# of staff years per 1,000 paying customer)	# of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average of periods amounting to no less than 3 months.	Around 55,000 out of 60,000 households in the urban wards covered by LSMC receive SWM services. The total number of municipal employees in SWM is 206, including 4 administrative officers, 5 supervisors, 15 drivers, 40 loaders, 9 mechanics, and 133 street sweepers. That equals 3.74 staff years per 1,000 SWM customers. No figures are available for actual paying customers. This is to be established by the municipality and an annual improvement of 5% is targeted.	-5%	-5%	-5%	-5%



Lalpur Sub-Municipality  
Pulchowk, Nepal

*Amul*

## TPIA Annex 3 – Lalitpur OBA Subsidy Determination and Disbursement

The project will pay subsidies to the municipality based on:

- › The Maximum Subsidy specified below
- › The Annual Subsidy Multiple (ASM) specified below
- › The Verified Beneficiary Revenue collected as described below

### Determination of the OBA Subsidy

The amount of subsidy payable for a given period will be calculated as

$$\text{Subsidy Payable}_{\text{periodt}} = \text{ASM}_{\text{periodt}} * \text{VerifiedBeneficiaryRevenue}_{\text{periodt}}$$

with the limitation that  $\text{Subsidy Payable}_{\text{periodt}}$  can never exceed  $\text{MaximumSubsidy}_{\text{periodt}}$ .

### The Maximum Subsidy and ASM

The Maximum subsidy and ASM for the municipality has been calculated based on the estimated total costs of the implementing the SWM-SIP (included in Annex 6) over a four year period and the total revenues (from beneficiary revenues, government contribution, and OBA subsidy) as agreed between SWMTSC and the municipality.

The Annual Maximum Subsidy amounts and ASMs are established as:

LALITPUR SUBSIDY DETERMINATION	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5 (post subsidy)
Cash expenditures in year under SWM-SIP (Rs Lakh)	886	1.659	1.572	1.208	1.307	1.368
Model Total Cost of Services (Rs Lakh)	994	1.418	1.455	1.482	1.593	1.707
Paid for by...						
Government commitment (Rs Lakh)	861	921	986	1.055	1.129	1.208
Verified Beneficiary Revenue (Rs Lakh)	20	84	112	144	183	230
Net OBA Subsidy (Rs Lakh)		412	358	283	281	
Surplus/deficit	113	-	-	-	-	270
Cost recovery target - Model Total Costs (%)	2%	6%	8%	10%	11%	13%
Cost recovery target - Cash expenditures (%)	2%	5%	7%	12%	14%	17%
Cost recovery target - O&M Costs (%)	2%	9%	10%	12%	15%	17%
Annual Subsidy Multiplier (ASM)		4.9		2.0	1.5	
Maximum Subsidy (Rs Lakh)		412	358	283	281	
Assumed change in tariff level		10%	10%	10%	10%	10%

It is important to note that the above calculation of the Model Total Cost of Service does not represent actual cash expenditures in the individual year as some components are accounting in nature (e.g. depreciation on existing and new capital asset).

JB

Amul

***The Verified Beneficiary Revenues***

Municipalities will report monthly on Beneficiary Revenues collected. The IFVA will subsequently verify the accuracy of reported figures based on an examination of municipal records and accounts.

The amount of Beneficiary Revenue that the IFVA confirms will form the basis for calculation of the OBA Grant by the IFVA as described above.

***Disbursement of the OBA Subsidy***

Please refer to Annex 4 Verification and Disbursement Procedures.



JB  
Amal

## TPIA Annex 4 - Verification and Disbursement Procedures

The disbursement of the OBA Subsidy will be subject to two separate independent verifications:

- › Independent technical verification confirming acceptable municipal delivery of SWM services, based on a review of technical scorecards and sample on-site verification of the service provided; and
- › Independent financial verification confirming the level of beneficiary revenues collected (the basis for calculation of the OBA matching grant), based on a validation of the SWM tariffs/charges deposited in the municipality's own account for SWM services.

Acceptable Technical Verification will trigger Financial Verification.

Acceptable financial verification will trigger the payment of the subsidy directly from the designated account to the municipality's SWM account, less any advances drawn from the Advances Facility.

In case of failed Technical Verification, municipalities will be permitted to seek re-verification on up to three occasions.

If in any year a municipality is not able to earn the maximum subsidy for that year, either due to failure to pass the technical verification or failure to improve its SWM revenue collection performance, the balance of the maximum subsidy for that year may be carried over to the subsequent year. The requirement for such carry over is that the municipality, in consultation with SWMTSC, has undertaken a review of the progress of SWM-SIP activities and revenue collection, and outlined in its annual report to SWMTSC the implementation lessons and what the municipality will do different the subsequent year to improve its technical and revenue collection performance.

The Technical Scorecard is attached to Annex 5 Reporting Formats.



## TPIA Annex 5 – Reporting Formats

The Municipality will report to TDF through SWMTSC as follows:

### *Quarterly Report*

The Municipality shall within 10 days of the beginning of each quarter submit quarterly/trimesterly reports to SWMTSC with the following information:

- › Status of SWM-SIP implementation
- › SWM fee charged (by category) and total beneficiary revenues collected
- › Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA
- › Status on invoicing of OBA subsidy
- › Total OBA subsidy invoiced and disbursed to date
- › Issues raised by the ITVA and IFVA in the Verification Reports
- › Expected activities for the next two quarters specifying any planned procurement or contracting
- › Details on any problems encountered
- › Filled out Technical Scorecards for the Quarter to be verified
- › Revised Technical Scorecards for any previous Quarter for which re-verification is requested

### *Annual Report*

The Municipality shall, within 30 days of the beginning each Fiscal Year, submit annual reports to SWMTSC with the following information:

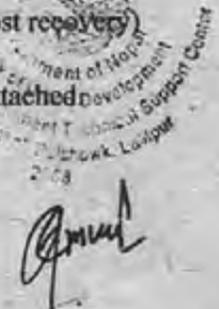
- › Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)
- › Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

### *Technical Scorecards (attached to the Quarterly Reports)*

Information on the Key performance indicators (KPIs) in the Technical Scorecard will be collected by the municipality for verification by the ITVA. The Technical Scorecard has 4 sections:

- › SWM strategy and action plan KPIs (which tracks the implementation of the SWM strategy and action plan for the municipality)
- › Performance monitoring KPIs (which tracks the availability of a system to capture and report key operational data)
- › Service provision KPIs (which tracks the provision of collection and disposal services against defined targets)
- › Financial KPIs (which tracks the developments in collection ratio, tariffs and cost recovery)

Sample formats for the Quarterly/Annual Reports and the Technical Scorecard are attached



**Sample Report - Participating Municipalities to SWMTSC (Quarterly & Annual)**

Municipality	
Period covered	
Status of SWM-SIP implementation	
Status of OBA project implementation	
SWM fee charged (by category) and total beneficiary revenues collected	
Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA	
Status on invoicing of OBA subsidy	
Total OBA subsidy invoiced and disbursed to date	
Issues raised by the ITVA and IFVA in the Verification Reports	
Expected activities for the next two quarters specifying any planned procurement or contracting	
Details on any problems encountered	

**Attachments to quarterly report:**

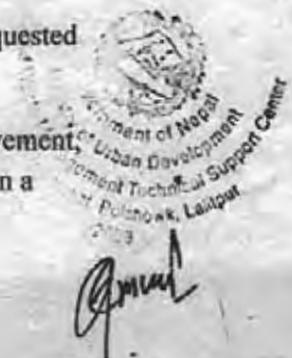
1. Filled-out Technical Scorecards for the Quarter (to be verified)
2. Revised Technical Scorecards for any previous Quarter for which re-verification is requested

**Additional attachments to annual report:**

3. Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)



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 Lalitpur Sub-Metropolitan City  
 Panchpokhari, Lalitpur



4. Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

**Sample report - Technical Scorecard**

**Municipality:**

**Period:**

#	KPI	Verifiable indicator	Self-assessment by Municipality
<b>SWM strategy and action plan KPIs</b>			
1,1	SWM Subject Committee <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR.</p> <p><b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.</p>	
1,2	Section/unit of municipality tasked with overseeing SWM <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP.</p> <p><b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.</p>	
1,3	SWM-SIP review and up-to-date <i>(binary pass / fail)</i>	<p><b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC</p>	  <p>Lalitpur Sub-Metropolitan City Pulchowk, Lalitpur</p>



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		review.	
1.4	Enabling PPP in MSW	<p><b>Year -1</b> 1.) Municipality prepares and approves formal strategy/policy on and practical guideline for involvement of private enterprises, NGOs and TLOs in waste management. 2.) Municipality works with SWMTSC on establishing (improving existing) contracts private operators.</p> <p><b>Year -2</b> 1.) Municipality establishes regulation on the (maximum) size of tariffs collected by private enterprises and NGOs involved in waste collection. 2.) Municipality establishes monitoring system for private operator service delivery in accordance with contract.</p> <p><b>Year -2-4</b> 1.) System for data collection on or self-reporting by private enterprises, NGOs and TLOs involved in MSW established.</p>	

**Performance monitoring KPIs**

2.1	Landfill operations and waste reduction  (binary pass / fail)	<p><b>Year 1:</b> Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives 'no objection.'</p> <p><b>Years 2-4:</b> (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review.</p>	
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<p>2.2</p>	<p>Communications systems <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality's SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address complaints). SWMTSC reviews communications system and gives 'no objection.' NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Years 2-4:</b> (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p>	
<p>2.3</p>	<p>Service delivery monitoring <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard's service provision KPIs. NOTE: This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its service delivery monitoring system with up-to-date data for all indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.</p>	 <p style="text-align: right;"><i>[Signature]</i></p>  <p style="text-align: right;"><i>[Signature]</i></p>



2,4	<p>Fiduciary monitoring system <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (iv) all financial indicators within the Technical Scorecard's Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives 'no objection.' <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its fiduciary monitoring system with up-to-date information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.</p>	
3,5	<p>Waste segregation and composting at household level</p>	<p>Percentage of households practicing proper and correct waste segregation at household level based on random inspection of 10% of households provided with bins for waste segregation and/or home composting.</p>	
3,6	<p>Waste recovery</p>	<p>Targets are established and actual performance is measured (by visual inspection and check records) for recovery of recyclable material and organic fraction in waste stream at transfer stations and landfill (share of recoverable materials actually being separated and recovered/sold/reused).</p>	



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**Service provision KPIs**

3.1	<p>Wards served  (% of municipal wards )</p>	<p>% of wards within a municipality's area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system.</p> <p>Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.</p>	
3.2	<p>Visual cleanliness in public areas, main streets and secondary streets  (% of wards receiving services)</p>	<p>Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.</p> <p>ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.</p>	
3.3	<p>Customer Satisfaction  (% of customers perceiving services delivered to SWM-SIP target standards)</p>	<p>% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.</p> <p>ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.</p>	 <p>Handwritten signature: MB</p>
3.4	<p>Safe disposal of collected waste  (binary pass / fail)</p>	<p>Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm).</p> <p>The ITVA may use visual inspection, interviews with individuals/TLOs, and</p>	 <p>Handwritten signature: Anil</p>



	<p>records for complaints received.</p> <p>Municipality should engage with hospitals/clinics and prepare strategy and action plan for dealing with medical waste (year 1).</p> <p>Municipality in cooperation with SWMTSC on development of new landfill capacity (year 1).</p> <p>A new landfill cell has been established in conformity with Nepali regulation (year 2).</p>	
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**Financial KPIs**

4.1	<p>SWM fee collection efficiency</p>	<p>Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year towards a goal of 90%.</p>	
4.2	<p>Increase in SWM fees charged</p> <p>(% increase on previous year)</p>	<p>Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.</p>	
4.3	<p>Labor efficiency</p> <p>(# of staff years per 1,000 paying customer)</p>	<p># of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average pf periods amounting to no less than 3 months.</p>	



# TPIA Annex 6 – Lalitpur Solid Waste Management Service Improvement Plan (SWM-SIP)

## *Executive summary*

### *Existing situation on solid waste management*

The following major challenges within existing SWM system in LSMC have been identified.

#### Collection and transportation service:

- › Collection services are provided in all current 22 wards by the LSMC (11 wards) and by private service providers (11 wards)
- › There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC
- › Institutions, supermarkets and hospitals have individual written agreements with LSMC for waste collection
- › The recent municipal reform will increase LSMC by 3 new VDCs which will need SWM service provision
- › Medical waste is not separated in collection from smaller clinics.

#### Recycling and composting:

- › The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill
- › A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households
- › 3,700 Compost bins have been distributed to households at subsidized rates (500 NRP versus full cost of 2,500 NRP)
- › An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste
- › There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling.
- › LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.

#### Treatment and disposal:

- › All waste for disposal is transported to the Okharpauwa landfill (43 km from the city center) which is operated jointly by Kathmandu and Lalitpur
- › There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility
- › The existing landfill has only limited remaining capacity and the long term landfill situation is unclear
- › Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

#### Institutional set up for SWM:

A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers, usually convenes on a monthly basis

- › The Environment and Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects
- › There is no contractual framework between LSMC and the private service providers concerning their involvement in SWM
- › The city does not charge households and businesses in the core areas serviced by the City, while waste generators in areas with private service provision have to pay for the service
- › The tariff of the private service providers is unregulated and no reporting on revenue collection and service performance takes place

#### Information and awareness activities:

- › The Social Welfare Division conducts training programs for women's groups including in relation to SWM
- › Private sector service providers such as NEPSEMAC and WEPCO are encouraging and giving training to people for household level composting

#### Financing of the SWM system:

- › The cost of service provision by LSMC (excluding depreciation on assets) has increased from 90.6 Lakh in 20012/13 to a budgeted 95.0 Lakh in 2014/15
- › The cost of service provision by the 14 private operators is not known but the three largest reported total costs in the order of 300 Lakh
- › LSMC collects 20 Lakh SWM fee from institutions, supermarkets and hospitals but does not presently collect a sanitation fee from households and small businesses in their service areas
- › The total sanitation fee collected by the 14 private operators in their service areas is not known, but the three largest reported 289 Lakh in tariff revenues
- › The recycling revenues of LSMC are minimal
- › The level of revenues from recycling by the 14 private service providers and the informal sector is unknown, but the three largest reported 33 Lakh in recycling revenues
- › Cost recovery of the municipal SWM system is zero (2013/14) prior to introduction of a sanitation fee in the LSMC service areas. In contrast cost recovery by the three largest private operators is 93% excluding recycling revenues and 104% including recycling revenues.

#### ***Solid Waste Management Service Improvement Plan (SWM-SIP)***

In line with the National SWM policy, the 2014 Solid Waste Management (SWM) Strategic Plan and Action Plan for Lalitpur Sub-metropolitan City<sup>1</sup> (the Strategic Plan) identified the following long term Strategic Objectives in relation to waste management:

- › To establish Municipal Solid Waste Management Information System (MSWMIS)
- › To improve collection and transportation system of source segregated sources
- › To promote 3R approach for waste minimization
- › To improve waste treatment and final disposal system
- › To promote public participation and behavior change of different stakeholders in SWM



<sup>1</sup>Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, Ministry of Urban Development, Solid Waste Management Technical Support Center (SWM-TSC), Final Report January 2014 (submitted by Engineering Study & Research Centre (P) Ltd, Ministry of Urban Development for Lalitpur Sub-metropolitan City.

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- › To enhance organizational, institutional and legal arrangements for effective SWM service
- › To develop financially sustainable SWM system
- › To facilitate special and hazardous waste management

The following targets are proposed in the strategic plan for recovery of organic and recyclable fraction and waste for landfill over the planning period:

- › Recovery of organic waste: Increase from 2% in 2014 to 40% in 2018 and 90% in 2028 at the end of the planning period
- › Recovery of recyclable fraction: Increase from 10% in 2014 to 40% in 2018 and 100% in 2028 at the end of the planning period
- › Waste for landfill: Decrease from 95% in 2014 to 62% in 2018 and 12% in 2028 at the end of the planning period

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 Lalitpur Sub-metropolitan City. The objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP are:

- › Collection services are provided for all households, institutions and commercials in all wards including the three new VDCs
- › Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas
- › Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share
- › Street sweeping in core area and at main streets and public areas in other areas
- › Improved operations practices at transfer and recovery sites
- › Recovery of organic waste to reach 40% in 2018
- › Recovery of recyclable fraction to reach 40% in 2018
- › Plan for healthcare waste management prepared

#### *Necessary investments and TA activities*

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

- › Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1<sup>st</sup> year - NPR 40 Lakh each
- › Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1<sup>st</sup> year - NPR 13 Lakh each
- › Replacement of four existing worn out secondary collection vehicles, two large tipper trucks at the existing temporary transfer station in year 1 and two large tipper trucks at the new transfer station in year 2) - NPR 40 Lakh each
- › Improvements in temporary transfer station including removal of old worn out vehicles and establishment of simple material recovery facility (MRF) in year 1 - NPR 50 Lakh (SWMTS will also support)
- › Front end loader at the temporary transfer station in year 1 - NPR 45 Lakh
- › New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh
- › Front end loader at the new transfer station in year 2 - NPR 45 Lakh
- › Loader for landfill in year 1 - NPR 80 Lakh
- › Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh

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Ministry of Nepal  
Department of Urban Development  
Lalitpur

- › Establish a construction waste management and recovery facility in year 2 – NPR 30 Lakh
- › Promote Source segregation in 15,000 household in 3 consecutive years – NPR 75 Lakh
- › Promote home composting or waste reduction from 4,000 households in 3 years – NPR 108 Lakh

**Surveys and feasibility studies:**

- › Carry out a survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- › Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station

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

- › Establishing operational manual for segregation and transfer facility operations and management including MRF
- › Introduction 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
- › Design and implementation of IEC campaigns
- › Assistance in development and implementation of information ad awareness campaigns for clean city and source segregation of waste
- › Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment
- › Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.

***Planned financing of the SWM-SIP implementation***

The costs of implementing the SWM-SIP will be paid for by a combination of:

- › Government budget commitment
- › Collected SWM tariffs
- › Service Delivery Subsidy under the OBA project

Lalitpur Sub-metropolitan City is committed to gradually introduce and enforce a SWM tariff to ensure an increase in the cost recovery from the present 2% to 17% over the four year implementation period of the SWM-SIP. This is a fundamental requirement to ensure sustainability of the SWM system after the implementation of the SWM-SIP.

***Monitoring and evaluation of the SWM-SIP implementation***

The implementation of the SWM-SIP will be monitored and evaluated by the Solid Waste Management Committee assisted by the Environment and Sanitation Section.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.



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# TPIA Annex 7 - LalitpurSWM-SIP Implementation Plan

MILESTONE	EXPECTED PERIOD (MONTH FROM TO)	
<b>Preparation</b>		
Participating Municipality agree with SWMTSC on area of priorities for service improvement	December 2014	February 2015
Municipality provide SWMTSC with copies of their SWM-SIP (with EMSP attached), service delivery model, billing & collection strategies and baseline data for technical scorecard	January 2015	March 2015
Municipality enter into Tripartite Implementation Agreements with SWMTC and TDF	January 2015	March 2015
SWMTSC contract technical assistance providers to assist municipality with implementation	February 2015	April 2015
TDF contract the IFVA and IFVA to perform the independent verification of delivered outputs as basis for OBA subsidy disbursement	February 2015	April 2015
<b>SWM-SIP Implementation</b>		
Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas	March 2015	April 2015
Municipality carries out a survey on location of hospitals and clinics and waste generation and prepares a plan on management of medical waste	April 2015	December 2015
Municipality conducts feasibility study on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station	April 2015	December 2015
Municipality procures equipment envisioned under SWM-SIP: <ul style="list-style-type: none"> <li>&gt; Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1<sup>st</sup> year - 40 Lakh each</li> <li>&gt; Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1<sup>st</sup> year - NRP 13 Lakh each</li> <li>&gt; Replacement of four existing worn out secondary collection vehicles, two large tipper trucks at the existing temporary transfer station in year 1, and two large tipper trucks at the new transfer station in year 2) - NRP 40 Lakh each</li> <li>&gt; Improvements in temporary transfer station including removal of old worn out vehicles and establishment of simple material recovery facility (MRF) in year 1 - NRP 50 Lakh (SWMTS will also support)</li> <li>&gt; Front end loader at the temporary transfer station in year 1 - NRP 45 Lakh</li> <li>&gt; New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh</li> <li>&gt; Front end loader at the new transfer station in year 2 - NRP 45 Lakh</li> <li>&gt; Loader for landfill in year 1 - NRP 80 Lakh</li> <li>&gt; Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh</li> <li>&gt; Establish a construction waste management and recovery facility in year 2 - NPR 30 Lakh</li> <li>&gt; Promote Source segregation in 15,000 household in 3 consecutive years - NPR 75 Lakh</li> <li>&gt; Promote home composting or waste reduction from 4,000 households in 3 years NPR 108 Lakh</li> </ul>	April 2015	April 2016



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Planned capacity building and awareness raising activities:	April 2015	March 2016
<ul style="list-style-type: none"> <li>&gt; Establishing operational manual for segregation and transfer facility operations and management including MRF</li> <li>&gt; Introduction of billing and revenue collection systems for SWM services</li> <li>&gt; Establishing a monitoring, evaluation and performance management systems for SWM services</li> <li>&gt; Design and implementation of 3R activities</li> <li>&gt; Design and implementation of IEC campaigns</li> <li>&gt; Assistance in development and implementation of information and awareness campaigns for clean city and source segregation of waste</li> <li>&gt; Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment</li> <li>&gt; Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.</li> </ul>		
Planned improvements in waste collection, street cleaning and transportation systems:	April 2015	March 2019
<ul style="list-style-type: none"> <li>&gt; Collection services are provided for all households, institutions and commercials in all wards including the three new VDCs</li> <li>&gt; Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share</li> <li>&gt; Street sweeping in core area and at main streets and public areas in other areas</li> </ul>		
Planned improvements in recycling & recovery systems and facilities:	April 2015	March 2019
<ul style="list-style-type: none"> <li>&gt; Recovery of organic waste: Increase from 2% in 2014 to 40% in 2018 and 90% in 2028 at the end of the planning period</li> <li>&gt; Recovery of recyclable fraction: Increase from 10% in 2014 to 40% in 2018 and 100% in 2028 at the end of the planning period</li> </ul>		
Planned improvements in treatment & disposal facilities:	April 2015	March 2019
<ul style="list-style-type: none"> <li>&gt; Waste for landfill: Decrease from 95% in 2014 to 62% in 2018 and 12% in 2028 at the end of the planning period</li> <li>&gt; Improved operations practices at transfer and recovery sites</li> <li>&gt; Plan for healthcare waste management prepared</li> </ul>		
<b>Service delivery, Verification and Subsidy disbursement</b>		
Municipality (or their designated service provider) deliver SWM services according to agreed terms	April 2015	March 2019
Beneficiary revenue collection	April 2015	March 2019
Quarterly reporting to SWMTSC on service provision (Technical Scorecard)	July 2015	March 2019
Independent technical and financial verification	July 2015	April 2019
Subsidy disbursement	July 2015	April 2019



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# Output-Based Aid in Municipal Solid Waste Management in Nepal

FINAL OPERATIONS MANUAL

APPENDICES



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# Output-Based Aid in Municipal Solid Waste Management in Nepal

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APPENDICES

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# APPENDICES

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Appendix C	Standard methodology for determining subsidy amounts
Appendix D	Guidelines for determination of SWM fee structure
Appendix E	Results Framework
Appendix F	Detailed Project Timeline
Appendix G	Template SWM-SIP & Checklists
Appendix H	Environmental and Social Management Framework
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## Appendix T Implementation Gantt Charts

## Appendix A Project Costs and Projected Disbursement Profile

### a) Summary of Project Costs

Component	GPOBA funding (USD)
Component 1 - Service Delivery Subsidy (Total required subsidy over four years for the initial 5 municipalities in the pipeline)	3,013,381
Component 2 – Implementation Support to Participating Municipalities	580,000
Component 3 - Project Management, Monitoring and Verification	695,000
<b>SUB-TOTAL</b>	<b>4,288,381</b>

### b) Projected disbursement profile

Component	Unit	Year 1	Year 2	Year 3	Year 4	Total
1 - Service Delivery Subsidy (maximum amounts)	USD	1,047,433	847,533	653,912	464,503	<b>3,013,381</b>
2 - Implementation Support to Participating Municipalities	USD	290,000	116,000	116,000	58,000	<b>580,000</b>
3 - Project monitoring and evaluation, verification and communication activities	USD	173,750	173,750	173,750	173,750	<b>695,000</b>
<b>Totals (excluding Bank Supervision)</b>	USD	<b>1,511,183</b>	<b>1,137,283</b>	<b>943,662</b>	<b>696,253</b>	<b>4,288,381</b>

## c) Detailed Breakdown of Costs

Description	Budget (USD)	Notes
<b>Service Delivery Subsidy (Component 1)</b>	<b>3.013.381</b>	From project financial model for the initial 5 municipalities
<b>Implementation Support to 5 Municipalities (Component 2)</b>		
a. Preparation of SWM service improvement plans;	120.000	Three municipalities in the 2nd batch (Pokhara, Lalitpur and Leknath). Budgeted at \$40,000 each
b. Establishing operational manual for landfill and upgrading landfill operations and management expertise;	40.000	Assuming only the 2 small municipalities - Dhankuta and Tansen - need specialized support (\$20,00 each)
c. Improvement of billing and revenue collection systems for SWM services;	90.000	Assuming only 2 non-UGDP/ETP municipalities need support. (\$45,00 each)
d. M&E and performance management systems for SWM services;	90.000	Assuming 2 non-UGDP/ETP municipalities need support (\$45,000 each)
e. Design and implementation of 3R activities;	50.000	All 5 municipalities each at \$10,000
f. Design and implementation of IEC campaigns; and	50.000	All 5 municipalities each at \$10,000
g. Design of appropriate contractual arrangements in cases where a municipality chooses to contract with the private sector, NGOs or community based organization (e.g. TLOs) or internal performance contracts between the SWM unit and the municipal authority	140.000	More elaborate contracts assumed for the two large municipalities. Simpler contracts with TLOs for the smaller municipalities. Additional resources (if needed) to be sourced from PPIAF
<b>Sub-total</b>	<b>580.000</b>	
<b>Project Monitoring, Evaluation and Communications (Component 3)</b>		
M&E system at SWMTSC	25.000	Lump sum
Baseline assessment	40.000	All 5 municipalities
SWM-SIP reviews (external consultants to support SWMTSC if required)	20.000	SWMTSC will need support in evaluating SWM-SIPs for the two larger municipalities
Periodic SWM cost model reviews	40.000	All 5 municipalities
Beneficiary assessments	40.000	All 5 municipalities
Comparative assessment of SWM service delivery models	40.000	lump sum
Independent technical verification	250.000	see project budget
Independent financial verification	150.000	see project budget
Fiduciary and Safeguards support	10.000	lump sum
Communication activities at central level (SWMTSC)	10.000	lump sum
Leadership forum	-	Team to explore funding opportunities with Cities Alliance
TDF Grant Admin Charges (1.5% of total grant)	70.000	As per existing agreements
<b>Sub-total</b>	<b>695.000</b>	
<b>TOTAL (component 2 and 3)</b>	<b>1.275.000</b>	
<b>TOTAL (all components)</b>	<b>4.288.381</b>	

Note: These breakdowns/allocations related to component 2 and 3 are tentative and can be planned as per actual requirements during implementation.

## d) TA Plan - Dhankuta

Total Budget (USD)	Breakdown per year				Mode of delivery	Complementary goods and services (e.g. computers, software, etc)	Financing sources			Roles					
	Y1	Y2	Y3	Y4			Description	Budget	OBA project	UGDP/ETP project	Others (specify)	Municipality	SWMTSC	MST	UGDP/ETP
	-	0	0	0			0								
15.000	15.000				TA Consultancy (Individual consultancy)			15.000				SWMTSC			
25.000	15.000	10.000			TA Consultancy			25.000				SWMTSC			
10.000	3.000	3.000			TA Consultancy	Purchasing computers, printers, SWMIS related software etc.,	4000	10.000			Municipality				
20.000	10.000	5.000	5.000		SWMTSC support, consultancy			20.000			Municipality	SWMTSC			
8.000	4.000	4.000						8.000			Municipality				
15.000	10.000	5000			TA Consultancy (consulting firms)			15000				SWMTSC			
<b>93.000</b>	57.000	27.000	5.000	0			4000	<b>93.000</b>							

## e) TA Plan - Tansen

Technical support broad categories	Technical support activities	Total Budget (USD)	Breakdown per year				Mode of delivery	Complementary goods and services (e.g. computers, software, etc)		Financing sources			Roles					
			Y1	Y2	Y3	Y4		Description	Budget	OBA project	UGDP/ETP project	Others (specify)	Municipality	SWMTSC	MST	UGDP/ETP		
<i>Implementation Support to 5 Municipalities (Component 2)</i>																		
a. Preparation of SWM service improvement plans;		-	0	0	0	0												
b. Establishing operational manual for landfill and upgrading landfill operations and management expertise;	(i) Preparation of Landfill site operational and management manual, (ii) preparation of compost plant operational manual and (iii) Training for operation and management of landfill site and compost plant (iv) Documentation for consulting survises	15,000	15,000				TA Consultancy (individual consultant)			15,000							SWMTSC	
c. Improvement of billing and revenue collection systems for SWM services;	(i) Preparation of billing and revenue collection software and leasers, (ii) training for operation of billing, revenue collection software, (iii) preparation of record keeping system for communication, GIS based collection routing system, log of collection vehicles, record keeping system development for vehicles entering into waste processing facilities including landfill site, compost plant and recycling facilities (iv) Documentation for consulting survises (v) logistrect for billing	25,000	15,000	10,000			TA Consultancy			25,000							SWMTSC	
d. M&E and performance management systems for SWM services;	(i) Requirement analysis of MIS system (ii) software development of management information system municipalities, (iii) logistic support to the municipalities for management information systems (base maps, computers, trainings etc.)	10,000	3,000	3,000			TA Consultancy	Purchasing computers, printers, SWMIS related software etc.,	4000	10,000							Municipality	SWMTSC
e. Design and implementation of 3R activities;	(i) Design of module for 3 R activities, (ii) training for waste minimization (launching of 3R project activities, (iii) implementation of 3R project activities	20,000	10,000	5,000	5,000		SWMTSC support, consultancy			20,000							Municipality	SWMTSC
f. Design and implementation of IEC campaigns	(i) Preparation and broadcasting of PSA, (ii) preparation of IEC material, (iii) dessimination of IEC materials	8,000	3,000	3,000	2,000					8,000							Municipality	
g. Design of appropriate contractual arrangements in cases where a municipality chooses to contract with the private sector, NGOs or community based organization (e.g. TLOs) or internal performance contracts between the SWM unit and the municipal authority	(i) Preparation of biding documents for PSP /PPP (ii) Praparation of contract document for PSP/PPP(ii) Consultation meeting and workshop for ppp/PSP (iv) Transportation to OBA municipalities (v) Documentation for consulting survises	15,000	7,000	8000			TA Consultancy (consulting firms)			15000								SWMTSC
	<b>Sub-total</b>	<b>93,000</b>	53,000	29,000	7,000	0			4000	<b>93,000</b>								

## f) TA Plan - Lekhnath

Technical support broad categories	Technical support activities	Total Budget (USD)	Breakdown per year				Lekhnath Municipality					Roles				
			Y1	Y2	Y3	Y4	Mode of delivery	Complementary goods and services (e.g. computers, software, etc)		Financing sources			Municipality	SWMTSC	MST	UGDP/ETP
			Description	Budget	OBA project	UGDP/ETP project		Others (specify)								
<i>Implementation Support to 5 Municipalities (Component 2)</i>																
a. Preparation of SWM service improvement plans;		-	0	0	0	0										
b. Establishing operational manual for landfill and upgrading landfill operations and management expertise;	(i) Preparation of Landfill site operational and management manual, (ii) preparation of compost plant operational manual and (iii) Training for operation and management of landfill site and compost plant (iv)Documentation for consulting survises	-	-				TA Consultancy (individual consultant)			-						SWMTSC
c. Improvement of billing and revenue collection systems for SWM services;	(i) Praparation of billing and revenue collection software and leasers, (ii) training for operation of billing, revenue collection software, (iii) preparation of record keeping system for comunication, GIS based collection routing system, log of collection vehicles, record keeping system development for vehicles entering into waste processing facilities including landfill site, compost plant and recycling facilities (iv)Documentation for consulting survises (v) logistrict for billing	18.000	7.000	8.000	3.000		TA Consultancy			18.000						SWMTSC
d. M&E and performance management systems for SWM services;	(i) Requirement analysis of MIS system (ii) software development of management information system municipalities, (iii) logistic support to the municipalities for management information systems (base maps, computers, trainings etc.)	12.000	4.000	4.000			TA Consultancy	Purchasing computers, printers, SWMIS related software etc.,	4000	12.000				Municipality		SWMTSC
e. Design and implementation of 3R activities;	(i) Design of module for 3 R activities, (ii) training for waste minimization (launching of 3R project activities, (iii) implementation of 3R project activities	15.000	5.000	5.000	5.000		SWMTSC support, consultancy			15.000				Municipality		SWMTSC
f. Design and implementation of IEC campaigns	(i) Preparation and broadcasting of PSA, (ii) preparation of IEC material, (iii) dessimination of IEC materials	8.000	2.000	3.000	3.000					8.000				Municipality		
g. Design of appropriate contractual arrangements in cases where a municipality chooses to contract with the private sector, NGOs or community based organization (e.g. TLOs) or internal performance contracts between the SWM unit and the municipal authority	(i) Preparation of bidding documents for PSP /PPP (ii) Praparation of contract document for PSP/PPP(iii) Consultation meeting and workshop for ppp/PSp (iv) Transportation to OBA municipalities (v)Documentation for consulting survises	15.000	10.000	5000			TA Consultancy (consulting firms)			15000						SWMTSC
<b>Sub-total</b>		<b>68.000</b>	28.000	25.000	11.000	0			4000	<b>68.000</b>						

## g) TA Plan - Lalitpur

		Lalitpur Sub Metropolitan City													
		Breakdown per year				Mode of delivery	Complementary goods and services (e.g. computers, software, etc)	Financing sources			Roles				
Technical support broad categories	Technical support activities	Total Budget	Y1	Y2	Y3			Y4	Description	Budget	OBA project	UGDP/ETP project	Others (specify)	Municipality	SWMTSC
<b>Implementation Support to 5 Municipalities (Component 2)</b>															
a. Preparation of SWM service improvement plans;	(i) EOI, RFP preparation, (notice publication, (iii) Evaluation of EOI and RFP, (iv) consultancy service for the preparation of SWM service improvement plans, (v) report review, (vi) consultation meetings/workshops with stakeholders, (vii) transportation cost (viii) Documentation for consulting service	40.000	40.000	0	0	0	TA Consultancy (consulting firms)		40000				SWMTSC		
b. Establishing operational manual for landfill and upgrading landfill operations and management expertise;	(i) Preparation of Landfill site operational and management manual, (ii) preparation of compost plant operational manual and (iii) Training for operation and management of landfill site and compost plant(iv)Documentation for consulting survises	12.000	12.000				TA Consultancy (individual consultant)		12.000				SWMTSC		
c. Improvement of billing and revenue collection systems for SWM services;	(i) Preparation of billing and revenue collection software and leasers, (ii) training for operation of billing, revenue collection software, (iii) preparation of record keeping system for communication, GIS based collection routing system, log of collection vehicles, record keeping system development for vehicles entering into waste processing facilities including landfill site, compost plant and recycling facilities (iv)Documentation for consulting survises (v) logistrict for billing	27.000	15.000	5.000	7.000		TA Consultancy		27.000				SWMTSC		
d. M&E and performance management systems for SWM services;	(i) Requirement analysis of MIS system (ii) software development of management information system municipalities, (iii) logistic support to the municipalities for management information systems (base maps, computers, trainings etc.)	23.000	9.000	7.000			TA Consultancy	Purchasing computers, printers, SWMIS related software etc.,	7000	23.000			Municipality	SWMTSC	
e. Design and implementation of 3R activities;	(i) Design of module for 3 R activities, (ii) training for waste minimization (launching of 3R project activities, (iii) implementation of 3R project activities	30.000	10.000	10.000	5.000	5.000	SWMTSC support, consultancy			30.000			Municipality	SWMTSC	
f. Design and implementation of IEC campaigns	(i) Preparation and broadcasting of PSA , drama and documentary related to solid waste management (ii) preparation of IEC material, (iii) dessmination of IEC	20.000	10.000	5.000	5.000					20.000			Municipality		
g. Design of appropriate contractual arrangements in cases where a municipality chooses to contract with the private sector, NGOs or community based organization (e.g. TLOs) or internal performance contracts between the SWM unit and the municipal authority	(i) Preparation of bidding documents for PSP /PPP (ii) Praparation of contract document for PSP/PPP(iii) Consultation meeting and workshop for ppp/Psp (iv) Transportation to OBA municipalities (iv)Documentation for consulting survises	20.000	10.000	10000	0		TA Consultancy (consulting firms)			20000			SWMTSC		
<b>Sub-total</b>		<b>172.000</b>	<b>106.000</b>	<b>37.000</b>	<b>17.000</b>	<b>5.000</b>			<b>7000</b>	<b>172.000</b>					

## h) TA Plan - Pokhar

		Pokhara Sub Metropolitan City													
		Breakdown per year				Mode of delivery	Complementary goods and services (e.g. computers, software, etc)	Financing sources			Roles				
Technical support activities	Total Budget	Y1	Y2	Y3	Y4			Description	Budget	OBA project	UGDP/ETP project	Others (specify)	Municipality	SWMTSC	MST
(i) EOI, RFP preparation, (notice publication, (iii) Evaluation of EOI and RFP, (iv) consultancy service for the preparation of SWM service improvement plans, (v) report review, (vi) consultation meetings/workshops with stakeholders, (vii) transportation (viii) Documentation for consulting survises	30.000	30.000	0	0	0	TA Consultancy (consulting firms)		30000				SWMTSC			
(i) Preparation of Landfill site operational and management manual, (ii) preparation of compost plant operational manual and (iii) Training for operation and management of landfill site and compost plant(iv)Documentation for consulting survises	15.000	15.000				TA Consultancy (individual consultant)		15.000				SWMTSC			
(i) Preparation of billing and revenue collection software and leasers, (ii) training for operation of billing, revenue collection software, (iii) preparation of record keeping system for communication, GIS based collection routing system, log of collection vehicles, record keeping system development for vehicles entering into waste processing facilities including landfill site, compost plant and recycling facilities (iv)Documentation for consulting survises	30.000	20.000	10.000			TA Consultancy		30.000				SWMTSC			
(i) Requirement analysis of MIS system (ii) software development of management information system municipalities, (iii) logistic support to the municipalities for management information systems (base maps, computers, trainings etc.)	23.000	8.000	8.000			TA Consultancy	Purchasing computers, printers, SWMIS related software etc.,	7000	23.000			Municipality	SWMTSC		
(i) Design of module for 3 R activities, (ii) training for waste minimization (launching of 3R project activities, (iii) implementation of 3R project activities	20.000	5.000	5.000	5.000	5.000	SWMTSC support, consultancy			20.000			Municipality	SWMTSC		
(i) Preparation and broadcasting of PSA, (ii) preparation of IEC material, (iii) dessimination of IEC materials	16.000	8.000	4.000	4.000					16.000			Municipality			
(i) Preparation of biding documents for PSP /PPP (ii) Praparation of contract document for PSP/PPP(iii) Consultation meeting and workshop for ppp/PSp (iv) Transportation to OBA municipalities(v) Documentation for consulting survises	20.000	10.000	10000			TA Consultancy (consulting firms)			20000			SWMTSC			
<b>Sub-total</b>	<b>154.000</b>	96.000	37.000	9.000	5.000			7000	<b>154.000</b>						

## Appendix B General Cost Model

*A simple spreadsheet-based model accompanies Appendices B and C.*

### **Background**

The capacity of Nepal's municipal institutions challenges any efforts to know precise costs of improving and delivering SWM services. Costs will also vary by municipality according to unique characteristics and the service delivery model that each municipality chooses to deploy. A key design feature of the project has been to provide municipalities with discretion over delivering services as they fit – within boundaries of technical, socially, and environmentally sound practice.

This requires a flexible approach to setting subsidies that does not inadvertently prescribe any single service delivery model and places responsibility for efficient service delivery with the municipalities themselves.

The determination of the Annual Subsidy Multiple (ASM) and the applicable Maximum Subsidy for the individual Participating Municipality is therefore based on a General Cost Model that combines:

- › The targets specified in each municipality's SWM Service Improvement Plan (SWM-SIP). SWMTSC and TDF will agree these targets with municipalities based on technical considerations with a view towards achieving the project's objectives.
- › Factors that make service delivery in each municipality slightly different (e.g., distance to a landfill site, cost of fuel in different parts of Nepal).
- › General benchmarks established by the SWMTSC.

### **Overview of the General Cost Model (GCM)**

The General Cost Model approximates the full costs of service delivery in three parts, including:

- 1 Capital costs;
- 2 Operations and maintenance expenses; and
- 3 Overhead and other expenses.

Estimates for costs in these areas will reflect each municipality's SWM-SIP which also forms the basis for agreeing technical scorecard targets.

For each year of the subsidy period estimated total cost will be calculated as follows:

$$\text{Total Cost} = \text{Capital Cost} + \text{O\&M Costs} + \text{Overhead and Other Costs}$$

The following sections describe each of the cost elements that comprise total cost estimates.

### **Capital Costs**

The General Model calculates the cost associated with capital used to provide services as follows:

$$\begin{aligned} \text{Capital Costs} = & (\text{NV Existing Assets}) * \text{Cost of Debt} \\ & + (\text{New Assets Under Development} + \text{Working Capital}) * (\text{Cost of Debt} + \text{ERP}) \\ & + \text{Depreciation Expense} \end{aligned}$$

Where:

- › NV Existing Assets = the value of a municipality's SWM service delivery assets net of accumulated depreciation at the beginning of the OBA project. Assets will include disposal facilities, vehicles (e.g. tractors), landfill equipment, etc. SMTSC will prepare estimates for net asset values based on replacement costs and a 'strait line' approach to depreciation
- › New Assets under development = the value of a municipality's SWM service delivery assets that are under development and yet to enter service. For example, this would include the value of any construction in progress during a year, or capital assets (e.g. vehicles or equipment) being procured.
- › Working Capital = 6 months of estimated beneficiary revenues per year based on estimated levels of cost recovery in a given year
- › Cost of Debt = [8%] as the actual or estimated rate on unsubsidized 10 year TDF loans for capital investment
- › ERP = 5% as an approximation for an equity risk premium over the cost of debt
- › Depreciation Expense = SWMTSC estimates for period depreciation expense based on the same model used for calculating NV Existing Assets

For municipalities that pay a 'tipping fee' to use an external landfill site, the capital cost should be calculated as follows:

$$\begin{aligned} \text{Capital Cost} = & \text{Tipping Fees} + (\text{NV Existing Assets}) * \text{Cost of Debt} \\ & + (\text{Assets Under Development} + \text{Working Capital}) * (\text{Cost of Debt} + \text{ERP}) \\ & + \text{Depreciation Expense} \end{aligned}$$

Where:

- › Tipping Fees = SWMTSC estimates for tonnage of solid waste collected \* the cost per ton to dispose of waste at the designated landfill site (as quoted by landfill owner or estimated by SMWTSC. Where actual arrangements for tipping fees are different, SWMTSC may use an alternative estimation approach that most closely approximates actual costs incurred.

### ***Operations and Maintenance Costs***

The General Model will calculate O&M costs as follows:

$$\text{O\&M Cost} = \text{Labor Estimate} * \text{Labor Cost} + \text{Equipment O\&M Costs} + \text{Other O\&M Expenses}$$

Where:

- › Labor cost = a municipality-specific multiple of the annualized most recent minimum wage (including dearness allowance) that the Ministry of Labor has published in the Government Gazette. The multiple applied to minimum wage will be based on actual levels of pay in a given municipality as identified during the preparation of SWM-SIPs. The Labor cost should represent an average across all levels of SWM staff. Where staff split time with other functions, SWMTSC may include fractional allocations of their corresponding salary expense.
- › Labor Estimate = Average number of customers served divided by estimated customer-to-staff ratios. SWMTSC and municipalities will specify target levels for customer-to-staff ratios within SWM-SIPs.
- › Average number Customers = a straight line estimate between initial and ending number of customers during the period. Estimated for future customers will reflect targets agreed in SWM-SIPs.

- › Equipment O&M costs = (Estimated service route km \* Estimated efficient fuel consumption per km \* diesel retail price) \* 110%. Estimated service route kilometres will reflect current service areas plus any additional coverage agreed in SWM-SIPs. The diesel retail price will be equivalent to the Nepal Oil Corporation's latest published retail price of diesel at the depot closest to a given municipality. SWMTSC will estimate efficient rates of fuel consumption based on the collection equipment that municipalities plan to use in delivering services as agreed in SWM-SIPs.
- › Other O&M expenses = other items which may be unique to a given municipality. For example, a municipality may have special arrangements for street sweeping or collecting medical waste. This category will also include an allocation for replacing rubbish / composting bins as the general cost model will approximate these as a period-specific expense rather than a capital asset. SWMTSC and municipality will estimate other O&M expenses based on what is reasonably required to implement SWM-SIP's effectively.

### ***Overhead and Other Expenses***

The General Model calculates overhead and other expenses as follows:

$$\text{Overhead and Other} = \text{O\&M Costs} * 40\%$$

This category includes the cost of items such as billing, administration, office expenses, communication and outreach (25% of O&M costs for administration, billing and collection and 15% for communication and outreach). Implementation support activities will pay particularly close attention to communications and outreach as this will be fundamentally important to increasing beneficiary willingness to pay.

### ***Sources of Data for General Cost Model Variables***

Table below summarizes responsibilities for collecting data for the General Cost Model along with data sources for each variable. TDF will have overall responsibility for managing General Cost Model analysis. SWMTSC will assist TDF responsible for the inputs of many of the key technical variables.

Table B1: Sources of data for General Cost Model

VARIABLE	RESPONSIBILITY	SOURCE	NOTES
<i>Capital Cost Variables</i>			
NV Existing Assets	SWMTSC	Asset valuation model – developed through technical assistance	<ul style="list-style-type: none"> <li>Costs should be ‘all in’ cost including land acquisition and existing vehicles</li> <li>Also may include sorting, recycling or composting facilities</li> <li>May require site visits</li> <li>May rely on supplier quotations or Engineer’s estimates</li> <li>GCM: Sheet ""asset"</li> </ul>
New assets	SWMTSC	Estimated costs to develop new assets as described in SWM-SIPs	<ul style="list-style-type: none"> <li>Technical scorecard targets for each municipality should reflect new / enhanced assets</li> <li>GCM: Sheet ""asset"</li> </ul>
Depreciation Expense	SWMTSC	Asset valuation model – developed through technical assistance	<ul style="list-style-type: none"> <li>Estimated based on inventory of capital assets and a ‘strait line’ method for depreciation.</li> <li>Also requires lifetime of assets and salvage value</li> <li>GCM: Sheet ""asset"</li> </ul>
Working Capital	TDF	SWM-SIP estimates based on agreed levels of cost recovery	<ul style="list-style-type: none"> <li>Approximated as 6 months of beneficiary revenue in a given year</li> <li>GCM: Sheet "GCM"</li> </ul>
Cost of Debt	TDF	Actual or estimated interest rate on unsubsidized TDF 10yr loans	<ul style="list-style-type: none"> <li>May also use average yield to maturity on GON bonds of similar tenor</li> <li>GCM: Sheet "Macro"</li> </ul>
Tipping Fees	SWMTSC	Actual or envisaged costs that municipalities pay for disposal	<ul style="list-style-type: none"> <li>Municipalities required to evidence actual costs paid</li> <li>GCM: Sheet "GCM"</li> </ul>
<i>O&amp;M Costs</i>			
Minimum Wage	TDF	Ministry of Labor published value	<ul style="list-style-type: none"> <li>Latest minimum value (as of May 2011 this was NPR 6,200 per month)</li> <li>GCM: Sheet "GCM"</li> </ul>
Diesel Retail Price	TDF	Nepal Oil Corporation <a href="http://www.nepaloil.com.np/main/?opt1=sellingprice&amp;opt2=sellingprice">http://www.nepaloil.com.np/main/?opt1=sellingprice&amp;opt2=sellingprice</a>	<ul style="list-style-type: none"> <li>‘Nearest’ retail depot based on driving distance</li> <li>GCM: Sheet "Macro"</li> </ul>
Service Route km	SWMTSC	SWM-SIPs and site visits by SWMTSC	<ul style="list-style-type: none"> <li>Will require an initial site visit to assess the route km traveled in delivering SWM services</li> <li>GCM: Sheet "GCM"</li> </ul>
Estimated efficient fuel consumption per km	SWMTSC	Equipment specifications, field observations or benchmarking	<ul style="list-style-type: none"> <li>Should also accommodate unique characteristics such as hilly terrain or altitude</li> <li>GCM: Sheet "GCM"</li> </ul>
Customer-to-staff ratio	SWMTSC	SWM-SIPs and agreed levels of efficiency improvement	<ul style="list-style-type: none"> <li>Will be municipality specific but informed by overall SWMTSC benchmarking efforts currently underway</li> <li>GCM: Sheet "GCM"</li> </ul>
Average # customers	SWMTSC	SWM-SIPs and agreed levels of service expansion as captured in technical scorecards	<ul style="list-style-type: none"> <li>Straight line estimate between estimated customer numbers at beginning and end of period</li> <li>GCM: Sheet "GCM"</li> </ul>
<i>Overhead and Other Expenses</i>			
Administration, billing and collection	N/A	WB	<ul style="list-style-type: none"> <li>25% of O&amp;M expenses</li> <li>GCM: Sheet "GCM"</li> </ul>
Communication and outreach	N/A	WB	<ul style="list-style-type: none"> <li>15% of O&amp;M expenses</li> <li>GCM: Sheet "GCM"</li> </ul>

Table B2: Calculation example Tansen &amp; Dhankuta (year 1-4)

VARIABLE	TANSEN	DHANKUTA
<b>Capital Cost Variables</b>		
NV Existing Assets	114,006,061	96,207,692
New assets	25,601,600	7,220,000
Depreciation Expense	-15,479,176	-6,196,923
Working Capital	7,932,844	5,616,250
Cost of Debt	8%	8%
Tipping Fees	0	0
<b>O&amp;M Costs</b>		
Minimum Wage	74,400 (year 0)	74,400 (year 0)
Diesel Retail Price	92.5 (year 0)	91.5 (year 0)
Service Route km	14,352 (year 0)	11,232 (year 0)
Estimated efficient fuel consumption per km	0.75	0.75
Customer-to-staff ratio	6 (year 0)	4.2 (year 0)
Average # customers	4,625	5,433
<b>Calculated Capital Costs</b>		
<i>Capital Costs = (NV Existing Assets) * Cost of Debt + (New Assets Under Development + Working Capital) * (Cost of Debt + ERP) + Depreciation Expense</i>	27,679,058	15,201,251
<b>Calculated O&amp;M Costs</b>		
<i>O&amp;M Cost = Labor Estimate * Labor Cost + Equipment O&amp;M Costs + Other O&amp;M Expenses</i>	27,173,013	17,122,114
<b>Calculated Overhead and Other Costs</b>		
<i>Overhead and Other = Administration, billing and collection + Communication and outreach = O&amp;M Costs * 40%</i>	10,869,205	6,848,846
<b>Calculated Total Costs</b>		
<i>Total Cost = Capital Cost + O&amp;M Costs + Overhead and Other Costs</i>	65,721,277	39,172,211

## Appendix C Standard methodology for determining subsidy amounts

A simple spreadsheet-based model accompanies Appendices B and C.

### Background

The project will pay subsidies to municipalities (the Subsidy Payable) based on:

- › The Verified Beneficiary Revenue collected, as reported by the municipalities and verified by the IFVA
- › The Annual Subsidy Multiple (ASM), calculated using the General Cost Model and specified in the Tripartite Project Implementation Agreements for each year within the subsidy period
- › The applicable Maximum Subsidy, calculated using the General Cost Model and specified in the Tripartite Project Implementation in any given year regardless of the amount of verified beneficiary revenue collected

### Method for Subsidy Payment

The amount of subsidy payable for a given period will be calculated as

$$\text{Subsidy Payable}_{\text{period } i} = \text{ASM}_{\text{period } i} * \text{Verified Beneficiary Revenue}_{\text{period } i}$$

with the limitation that  $\text{Subsidy Payable}_{\text{period } i}$  can never exceed  $\text{Maximum Subsidy}_{\text{period } i}$ .

Financial verification will match the time period of revenues collected with the appropriate ASM for that year. ASMs will be a function of targeted levels of cost recovery and agreed long term municipal government subsidy commitment levels.

The amount of municipal government subsidy will be equivalent to the envisaged full cost recovery gap in the year following a four year period of OBA support. This amount will approximately constant (in real terms) through the life of the OBA intervention such that a consistent fiscal space for SWM services will develop within each municipality's budget. It is important to note that municipal government subsidy commitments will not represent actual cash expenditures. Some component will inevitably be accounting in nature (e.g. capital asset depreciation). Similarly, the source of funds for municipal commitments may come via another tier of government.

The general formula for ASM in a given year will be:

$$\text{ASM}_{\text{period } i} = \frac{100\% - \% \text{ Municipal Government Commitment}}{\% \text{ Cost Recovery Target}_{\text{period } i}} - 1$$

This is in turn equivalent to:

$$\text{ASM}_{\text{period } i} =$$

$$\frac{\text{GCM Total Cost}_{\text{period } i} - \text{GCM Municipal Government Commitment}_{\text{period } i}}{\text{GCM Beneficiary Revenues}_{\text{period } i}} - 1$$

The “GCM” variables in the above formula would come from a municipality’s General Cost Model that TDF and SWMTSC will finalize when project participants agree on a final SWM-SIP and sign the Tripartite Project Implementation Agreement.

Cost recovery targets in each year will represent a linear progression from a municipality’s initial level of cost recovery toward agreed cost recovery targets. As a general rule, final cost recovery targets should aim at covering at least operations and maintenance expenses through Beneficiary Revenue collected.

The table below provides an illustrative example for the matching of annual cost recovery targets, government subsidy commitment, ASMs, and subsidies payable.

Table C1: Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable

Calculation example Tansen

ITEM	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4
Passing technical scorecard (yes/no)	No	Yes	Yes	Yes	Yes
Cost recovery target (%)	1.4 %	11 %	20 %	29 %	38 %
Government contribution target (%)	51.0 %	43 %	45 %	47 %	48 %
Annual Subsidy Multiplier (ASM)	0	4.14	1.75	0.84	0.36
Maximum Subsidy	-	78,944	62,277	44,458	25,437
<b>Estimated Total Cost of Services</b>	166,963	173,222	177,825	182,395	186,870
<b>Paid for by...</b>					
Municipal Government Commitment	93,921	75,224	79,982	85,042	90,422
Verified Beneficiary Revenue	2,521	19,054	35,565	52,895	71,011
Net OBA Matching Grant	-	78,944	62,277	44,458	25,437
Surplus(+)/deficit(-)	-70,520	0	0	0	0

From General cost model

Hypothetical achievement during implementation

Municipalities will report on Beneficiary Revenues collected. The IFVA will subsequently verify the accuracy of reported figures based on an examination of municipal records and accounts. The amount of Beneficiary Revenue that the IFVA confirms will form the basis for calculation of the OBA Matching Grant.

### ***Determination of Maximum subsidy and ASM based on GCM***

Determining the Maximum subsidy and ASM for the individual municipality will involve the following steps:

- 1 SWM-SIP + SWMTSC Benchmarks will provide basic data for inputs to the General Cost Model (Appendix C)
- 2 SWMTSC and municipalities will apply the General Cost Model and collaboratively agree on target values for:

- › Total costs (as determined by SWM-SIPs, delivery model and billing & collection model)
  - › Total revenues (from beneficiary revenues, government contribution, and OBA subsidy)
- 3 Agreed maximum subsidy amounts and ASMs will be codified in Tripartite Project Implementation Agreements.

A calculation example is shown below based on the GCM model example included in Appendix C.

Table C2: Calculation example Tansen

ITEM	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4
Passing technical scorecard (yes/no)	No	Yes	Yes	Yes	Yes
Cost recovery target (%)	1.4 %	11 %	20 %	29 %	38 %
Government contribution target (%)	51.0 %	43 %	45 %	47 %	48 %
Annual Subsidy Multiplier (ASM)	0	4.14	1.75	0.84	0.36
Maximum Subsidy	-	78,944	62,277	44,458	25,437

Table C3: Calculation example Dhankuta

ITEM	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4
Passing technical scorecard (yes/no)	No	Yes	Yes	Yes	Yes
Cost recovery target (%)	5.8%	15.0%	24.0%	33.0%	42.0%
Government contribution target (%)	59.0%	48.5%	48.6%	48.0%	46.7%
Annual Subsidy Multiplier (ASM)	0.00	2.43	1.14	0.58	0.27
Maximum Subsidy	-	43,148	34,462	25,659	16,748

### *Determination of Subsidy Payable*

Table C4 illustrates an example of subsidies payable based on Verified Beneficiary Revenues, and hypothetically agreed ASMs.

Table C4: Calculation example Dhankuta

ITEM	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4
Passing technical scorecard (yes/no)	No	Yes	Yes	Yes	Yes
Cost recovery target (%)	6.9%	16%	25%	34%	43%
Government contribution target (%)	71.1%	42%	43%	43%	44%
Annual Subsidy Multiplier (ASM)	0,00	2,64	1,30	0,67	0,30
Maximum Subsidy	-	42,294	33,916	24,852	14,998
<b>Estimated Total Cost of Services</b>	<b>95,860</b>	<b>100,301</b>	<b>104,706</b>	<b>109,527</b>	<b>114,798</b>
<b>Paid for by...</b>					
Actual Government Commitment	68,163	41,959	44,613	47,436	50,436
Verified Beneficiary Revenue	6,576	16,048	26,177	37,239	49,363
Net OBA Matching Grant	-	42,294	33,916	24,852	14,998
Surplus/deficit	21,120	-	-	-	-

## Appendix D Guidelines for determination of SWM fee structure

When determining the SWM fee structure the municipality should consider the guidance provided in the "National Guidelines on Solid Waste Management Services Fee"<sup>1</sup> and guidance provided by the SWMTSC.

In particular the following guidance applies:

- › **Gradually moving towards O&M cost recovery**  
Target revenues should be based on full cost recovery after sustainable and committed budget subsidies. Budget subsidies should gradually be reduced and SWM fees increased over a 5-10 period
- › **Polluter pays principle**  
Fee should be differentiated based on volume of waste generated.  
This will e.g. mean that fee can be differentiated:  
*Hotel > Restaurant > Shop > Household*
- › **Premium price for premium service**  
Beneficiaries receiving higher quality of service should pay more than beneficiaries receiving lower quality of service. This will e.g. mean that fee can be differentiated:  
*Street sweeping and daily collection > No street sweeping and 1-3 collections per week > No collection*  
or  
*Door to door collection > Bring to truck > Communal container > No collection*  
If there is a close correlation between the quality of service and the geographic location, the fee may alternatively be differentiated based on the location:  
*Main roads > Subsidiary black topped roads > gravelled or earthen roads*
- › **Special services should be based on full cost recovery**  
This is typically the case for collection of industrial waste, commercial waste and bulky waste on demand.
- › **Affordability limits should be observed**  
Household SWM fee should be no more than 1% of household income.
- › **Public goods not charged separately**  
Street sweeping and clearance of illegal dumps should be charged either through the calculation of the basis for the SWM fee or through general taxes.

A possible stepwise approach to determining SWM service fees is:

1. **Classify waste generator into different categories**  
This could be household consumers, commercial, and institutional establishments. The actual number in each category should be known.
2. **Estimate waste generation**  
This should be differentiated between households, non-residential premises, and in public places.

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<sup>1</sup> "National Guidelines on Solid Waste Management Services Fee", Draft 18th July 2012, prepared by P.U. Asnani and Pawan Lohani through IPE in association with ERMC for ADB under the Capacity Building for Waste Management Technical Assistance Project.

**3. Determine service options**

For households (how will the quality of service be differentiated between residential consumers in urban, semi urban and rural areas), non-residential beneficiaries (e.g. door to door collection, bulk waste collection on demand basis, container service for vegetable and construction waste, collection of treated waste from hospitals and industry) and public areas (street sweeping and cleaning, clearance of illegal dumps).

**4. Estimate the cost of the SWM system**

This should include collection, transportation, processing, disposal, administration and overheads.

**5. Determine sustainable budgetary subsidies**

What is the available budgetary subsidies that can sustainably be committed for SWM.

**6. Determine the necessary total beneficiary revenues**

This will be Estimated Cost of Service minus Committed Budgetary Subsidies.

**7. Divide necessary beneficiary revenues on waste generators**

This should be done using the guidance provided above. The result will be a set of SWM fees by individual beneficiary categories which when multiplied with the known number of beneficiaries in each category and a realistic estimated level of collection sums to the necessary total beneficiary revenues.

**8. Assess affordability and political acceptability**

The resulting SWM fee structure should be tested for affordability and political acceptability and an iterative process where the division between beneficiary categories as well as the committed level of budget subsidies or even the planned quality of service is revisited to ensure balance may be mandated.

## Appendix E Results Framework

### Appendix E.1 - Project results framework

Project Development Objective PDO	Project Outcome Indicators
<p>The objective of the project is to improve access to high quality and financially sustainable SWM services in selected secondary cities in Nepal.</p>	<p><i>Improved quality of services</i></p> <ul style="list-style-type: none"> <li>› Number of households within the core city area receiving daily waste collection services on a door-to-door curbside basis;</li> <li>› Number of households outside the core city area receiving at least weekly waste collection services on a ‘bring to truck’ or communal container basis (i.e. households carry their waste to a communal container which is then collected on a weekly basis);</li> <li>› Percentage of wards/zones within a municipality’s area that are receiving regular SWM services, as per stated service levels in the municipality’s solid waste management service improvement plan</li> <li>› Percentage of wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection; and</li> <li>› Percentage of sampled households who report that waste collection and street cleaning services provided by the municipality have met or exceeded their expectations in the key areas of reliability, frequency, improvement in environmental quality, convenience and responsiveness.</li> </ul> <p><i>Improved financial sustainability</i></p> <ul style="list-style-type: none"> <li>› Increase in SWM fee charged to all waste generators;</li> <li>› Annual revenues from collected SWM fees; and</li> <li>› Percentage O&amp;M cost recovery from SWM fees.</li> </ul>
Intermediate Outcomes	Intermediate Outcome Indicators
<p>1. Implementation of the SWM strategy and action plan for the municipality</p>	<p><i>SWM strategy and action plan KPIs</i></p> <ul style="list-style-type: none"> <li>› <u>SWM Subject Committee established</u> Year 1: (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR. Years 2-4: (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.</li> <li>› <u>Section/unit of municipality tasked with overseeing SWM established</u> Year 1: (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP. Years 2-4: (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.</li> <li>› <u>SWM-SIP review and up-to-date</u> Years 2-4: (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.</li> </ul>

Intermediate Outcomes	Intermediate Outcome Indicators
2. Availability of a system to capture and report key operational data	<p><i>Performance monitoring KPIs</i></p> <ul style="list-style-type: none"> <li> <p>› <u>Landfill operations and waste reduction</u>  Year 1: Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives ‘no objection.’  Years 2-4: (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review."</p> </li> <li> <p>› <u>Communications systems</u>  Year 1: the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality’s SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address complaints). SWMTSC reviews communications system and gives ‘no objection.’ NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.  Years 2-4: (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p> </li> <li> <p>› <u>Service delivery monitoring</u>  Year 1: the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard’s service provision KPIs. NOTE: This system could be a simple spreadsheet and does not need to be technologically sophisticated.  Year 2-4: (i) the municipality maintains its service delivery monitoring system with up-to-date data for all indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.</p> </li> <li> <p>› <u>Fiduciary monitoring system</u>  Year 1: the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (iv) all financial indicators within the Technical Scorecard’s Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives ‘no objection.’ NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.  Year 2-4: (i) the municipality maintains its fiduciary monitoring system with up-to-date information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.</p> </li> </ul>

Intermediate Outcomes	Intermediate Outcome Indicators
3. Provision of collection and disposal services against defined targets	<p><i>Service provision KPIs</i></p> <ul style="list-style-type: none"> <li>› <u>Wards served</u> Percentage of wards within a municipality's area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system. Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.</li> <li>› <u>Visual cleanliness in public areas, main streets and secondary streets</u> Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA. ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.</li> <li>› <u>Customer Satisfaction</u> Percentage of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts. ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.</li> <li>› <u>Safe disposal of collected waste</u> Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm). The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received.</li> </ul>
4. Developments in collection ratio, tariffs and cost recovery	<p><i>Financial KPIs</i></p> <ul style="list-style-type: none"> <li>› <u>SWM fee collection efficiency</u> Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year towards a goal of 90%.</li> <li>› <u>Increase in SWM fees charged</u> Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.</li> <li>› <u>Labor efficiency</u> Number of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average of periods amounting to no less than 3 months.</li> </ul>

## Arrangements for Results Monitoring

Project Outcome Indicators	Baseline	Target Values				Data Collection and Reporting		
		YR1	YR2	YR3	YR4	Frequency & Reports	Data Collection Instruments	Responsibility for Data Collection
<ul style="list-style-type: none"> <li>› Improved quality of services</li> <li>› Number of households within the core city area receiving daily waste collection services on a door-to-door curbside basis</li> <li>› Number of households outside the core city area receiving at least weekly waste collection services on a 'bring to truck' or communal container basis</li> <li>› Percentage of wards/zones within a municipality's area that are receiving regular SWM services, as per stated service levels in the municipality's solid waste management service improvement plan</li> <li>› Percentage of wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection</li> <li>› Percentage of sampled households who report that waste collection and street cleaning services provided by the municipality have met or exceeded their expectations</li> </ul>	Municipal SWM Baseline Study (to be prepared as part of SWM-SIP process)					Quarterly	Self reporting by municipalities and Independent Technical Verification	SWMTSC
<ul style="list-style-type: none"> <li>› Improved financial sustainability</li> <li>› Increase in SWM fee charged to all waste generators;</li> <li>› Annual revenues from collected SWM fees; and</li> <li>› Percentage O&amp;M cost recovery from SWM fees.</li> </ul>	Municipal Baseline Study					Quarterly	Independent Financial Verification	IFVA

Project Outcome Indicators	Baseline	YR1	YR2	YR3	YR4	Frequency & Reports	Data Collection Instruments	Responsibility for Data Collection
<b>Intermediate Outcome Indicators</b>								
<i>SWM strategy and action plan KPIs</i> <ul style="list-style-type: none"> <li>&gt; SWM Subject Committee established</li> <li>&gt; Section/unit of municipality tasked with overseeing SWM established</li> <li>&gt; SWM-SIP review and up-to-date</li> </ul>	Municipal Baseline Study					Quarterly/trimester	Independent Technical Verification	ITVA
<i>Performance monitoring KPIs</i> <ul style="list-style-type: none"> <li>&gt; Landfill operations and waste reduction</li> <li>&gt; Communications systems</li> <li>&gt; Service delivery monitoring</li> <li>&gt; Fiduciary monitoring system</li> </ul>	Municipal Baseline Study					Quarterly/trimester	Independent Technical Verification	ITVA
<i>Service provision KPIs</i> <ul style="list-style-type: none"> <li>&gt; Wards served</li> <li>&gt; Visual cleanliness in public areas, main streets and secondary streets</li> <li>&gt; Customer Satisfaction</li> <li>&gt; Safe disposal of collected waste</li> </ul>	Municipal Baseline Study					Quarterly/trimester	Independent Technical Verification	ITVA
<i>Financial KPIs</i> <ul style="list-style-type: none"> <li>&gt; SWM fee collection efficiency</li> <li>&gt; Increase in SWM fees charged</li> <li>&gt; Labor efficiency</li> </ul>	Municipal Baseline Study					Quarterly/trimester	Independent Financial Verification	IFVA

## Appendix E.2 - Technical Scorecard

*A spreadsheet-based version of the Technical Scorecard accompanies Appendix E.2*

Central to project monitoring is a Technical Scorecard which has been specially developed as performance management tool for the OBA project and beyond. Consistent with the project design, acceptable technical verifications will trigger financial verification. Acceptable financial verification will trigger the payment of the OBA matching grant directly from the designated account to the municipality's SWM account.

Information on the Technical Scorecard will be collected by each municipality, verified by the ITVA and reported to SWMTSC and copied to TDF and World Bank/GPOBA for monitoring and tracking purposes. TDF will also conduct audits of the project as designated in the Grant Agreement, and will provide the necessary information to complete the table below.

The Technical Scorecard has 4 sections:

- 1 SWM strategy and action plan KPIs (which tracks the implementation of the SWM strategy and action plan for the municipality)
- 2 Performance monitoring KPIs (which tracks the availability of a system to capture and report key operational data)
- 3 Service provision KPIs (which tracks the provision of collection and disposal services against defined targets)
- 4 Financial KPIs (which tracks the developments in collection ratio, tariffs and cost recovery)

The two first sections are prerequisites for successful implementation and monitoring of the OBA intervention whereas the two latter sections track the actual performance of the OBA intervention. The focus during the first year is to make sure the municipalities get the prerequisites right, whereas the focus in the remaining years is on the actual performance of the OBA intervention.

KPI section	Minimum compliance year 1	Minimum compliance year 2-4
<b>1. SWM strategy and action plan KPIs</b>	5 out of 10	10 out of 15
<b>2. Performance monitoring KPIs</b>	25 out of 45	15 out of 20
<b>3. Service provision KPIs</b>	20 out of 30	25 out of 35
<b>4. Financial KPIs</b>	10 out of 15	20 out of 30
<b>Total minimum compliance requirement</b>	<b>60 out of 100</b>	<b>70 out of 100</b>

If independent technical verification confirms achievement of minimum technical compliance in the year, the independent financial verification will calculate the Gross OBA Matching Grant as an agreed multiple of the verified SWM revenues in the year.

## 1 SWM strategy and action plan KPIs (10% weight in year 1, 15% weight in year 2-4)

#	KPI	Verifiable indicator	Marks year 1	Marks year 2-4	Target Values by Year				
					0 (baseline)	1	2	3	4
<b><i>SWM strategy and action plan KPIs</i></b>									
1.1	SWM Subject Committee <i>(binary pass / fail)</i>	<b>Year 1:</b> (i) TOR drafted and approved by Executive Officer of Municipality; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR.  <b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.	5	5		Pass	Pass	Pass	Pass
1.2	Section/unit of municipality tasked with overseeing SWM <i>(binary pass / fail)</i>	<b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP.  <b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.	5	5		Pass	Pass	Pass	Pass
1.3	SWM-SIP review and update <i>(binary pass / fail)</i>	<b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.	-	5		Pass	Pass	Pass	Pass
			<i>Total marks possible</i>	10	15				
			<i>Minimum passing score</i>	5	10				



### 3 Service provision KPIs (30% weight in year 1, 35% weight in year 2-4)

#	KPI	Verifiable indicator	Marks year 1	Marks year 2-4	Target Values by Year				
					0 (baseline)	1	2	3	4
<i>Service provision KPIs</i>									
3.1	Wards served  (% of municipal wards )	% of wards within a municipality's area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system.  Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.	5	5		TBD	TBD	TBD	TBD
3.2	Visual cleanliness public areas, main streets and secondary streets  (% of wards receiving services)	Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.  ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.	5	5		TBD	TBD	TBD	TBD
3.3	Customer satisfaction  (% of customers perceiving services delivered to SWM-SIP target standards)	% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.  ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.	5	10		TBD	TBD	TBD	TBD
3.4	Safe disposal of collected waste  (binary pass / fail)	Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards.  The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received .	15	15		Pass	Pass	Pass	Pass
<i>Total marks possible</i>			30	35					
<i>Minimum passing score</i>			20	25					

\*TBD –To be determined. SWMTSC will agree actual targets with each individual municipality as part of the TPIA

#### 4 Financial KPIs (15% weight in year 1, 30% weight in year 2-4)

#	KPI	Verifiable indicator	Marks year 1	Marks year 2-4	Target Values by Year				
					0 (baseline)	1	2	3	4
<b>Financial KPIs</b>									
4.1	SWM fee collection efficiency	Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year towards a goal of 90%.	5	10		TBD	TBD	TBD	TBD
4.2	Increase in SWM fees charged (% increase on previous year)	Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.	5	10		TBD	TBD	TBD	TBD
4.3	Labor efficiency (# of staff years per 1,000 paying customer)	# of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average pf periods amounting to no less than 3 months.	5	10		TBD	TBD	TBD	TBD
			<i>Total marks possible</i>	15	30				
			<i>Minimum passing score</i>	10	20				
			<b>Total marks possible</b>	100	100				
			<b>Minimum passing score</b>	60	70				

\*TBD –To be determined. SWMTSC will agree actual targets with each individual municipality as part of the TPIA

## Appendix F Detailed Project Timeline

Below are the key milestones for project implementation.

MILESTONE	EXPECTED MONTH
Grant Agreement between the World Bank and the Recipient	0
Project operational manual adopted by the Recipient (Ministry of Finance) and the Project Implementing Entity (TDF).	1
Subsidiary Agreement between the Recipient (Ministry of Finance) and the Project Implementing Agency (TDF).	3
Memorandum of Understanding has been executed on behalf of the Project Implementing Entity (TDF) and the Technical Implementing Partner (SWMTSC).	3
Tripartite Project Implementation Agreements (TPIAs) between TDF, SWMTSC and the Participating Municipalities signed (batch I)	3
1 <sup>st</sup> batch of SWM Service Improvement Plans completed <sup>1</sup>	3
Implementation of 1 <sup>st</sup> batch of SWM Service Improvement Plans begins	4
Selection and recruitment of ITVA and IFVA	4
First independent technical and financial verification for 1 <sup>st</sup> batch of municipalities	7
Subsidy disbursements for municipalities under the 1 <sup>st</sup> batch begins	8
2 <sup>nd</sup> batch of SWM service improvement plans completed <sup>2</sup>	7
Tripartite Project Implementation Agreements (TPIAs) between TDF, SWMTSC and the Participating Municipalities signed (batch II)	8
Implementation of 2 <sup>nd</sup> batch of SWM service improvement plans begins	8
First independent technical and financial verification for 2 <sup>nd</sup> batch of municipalities	11
Subsidy disbursements for municipalities under the 2 <sup>nd</sup> batch begins	12
Subsidy disbursements for municipalities under the 1 <sup>st</sup> batch ends	8 + 48 = 56
Subsidy disbursements for municipalities under the 2 <sup>nd</sup> batch ends	12 + 48 = 60

Note: Detail Gantt chart in spread sheet in annex T.

<sup>1</sup> The 1<sup>st</sup> batch includes municipalities who are in advanced stages of preparing their SWM SIP at the time of commitment (e.g. Dhankuta and Tansen).

<sup>2</sup> The 2<sup>nd</sup> batch includes municipalities who have not yet started on their SWM SIP at the time of commitment (e.g. Lekhnath, Pokhara and Lalitpur).

## Appendix G Template SWM-SIP & Checklists

### Template for Solid Waste Management Service Improvement Plans (SWM-SIP)

#### Executive summary

#### 1. Introduction

*(Description of the background for the preparation of the four years solid waste management service improvement plan (SWM-SIP), purpose/objectives, stakeholders, approach and methodology for the development of the plan, donors and consultants involved)*

#### 2. Socio-economic background data

##### › General description of the area

*(Geographical location, area of the municipality, accessibility, climate conditions, land use patterns. Maps should be included)*

##### › Population and households

*(Population and households according to the Population Census 2001 and estimated current population and number of households totally and by wards. Number of single family houses, multi-storey houses etc.)*

##### › Industrial and commercial activities

*(Brief description of main industrial and commercial activities including number of enterprises registered in the municipality)*

#### 3 Description and analysis of existing situation on solid waste management

##### › Methodology and data collection

*(Description of how the data have been collected and the different sources)*

##### › Estimation of waste generation and composition

*(Estimation of waste generation and composition with reference to possible previously surveys. The unit waste generation (kg/person/day) should be estimated (and compared to the unit waste generation in similar municipalities) as well as the estimated generation of waste from the commercial and public sector. If no actual surveys have been identified the estimation could be based on experience from similar municipalities in Nepal, where waste characterization and quantification surveys have been carried out. Optional a brief waste characterization and quantification survey could be carried out in the municipality)*

##### › Existing solid waste collection, street cleaning and transportation system

*(Description of the existing waste collection, street cleaning and transportation systems in the different areas/wards of the municipality including frequency of waste collection and street sweeping as well as areas/inhabitants not serviced by waste collection services. Assessment of the suitability of the systems. Description of number and age of equipment and vehicles and garage/workshop, number of drivers, waste collectors and street sweepers. Collected amounts of waste.)*

##### › Existing solid waste recycling system

*(Description of existing formal and informal systems for separation or collection of recyclable materials, collected amounts and price of the recyclable materials)*

- › Existing treatment of solid waste  
*(Description of existing treatment facilities for solid waste including possible system/pilot project for home composting including capacity and number of composting bins. Location of the facilities. Number of staff. Possible problems with the existing facilities, e.g. why is an existing composting facility not in operation)*
- › Existing disposal of solid waste  
*(Description of existing dump site/landfill including design and operation of the site as well as amount of waste disposed per year, total and remaining capacity of the facility. Location of the facility. Equipment used at the facility. Number of staff. Monitoring and registration systems. Possible environmental problems including claims.*
- › Hazardous waste collection, treatment and disposal  
*(Brief description of management of hazardous waste including health care waste and possible other special waste streams in the municipality)*
- › Existing solid waste management organization including private sector participation  
*(Stakeholder analysis (including positive and negative social impacts) and description of the institutional set up in the municipality (existing organization, filled positions, unfilled positions) and of existing cooperation with the TLOs, NGOs and Private Companies.).*
- › Information and awareness activities  
*(Description of possible information and awareness activities as well as training and capacity building activities)*
- › Waste collection and disposal tariffs  
*(Description of existing structure and tariffs for waste collection and disposal. Method of collection of fees and efficiency (% of total potential fees collected for households and commercials etc. Household income in the municipality to be compared with the existing tariff for waste collection etc.)*
- › Existing finance and budget  
*(Budget and actual expenditures for solid waste management activities in the municipality as well as total budget and expenditures. Sources of financing)*
- › Policy and legal framework  
*(Brief description of relevant existing waste legislation, national policy, strategy/program and targets within waste management to be considered in the development of the SWM-SIP))*
- › Description of identified major problems within existing waste management system  
*(Identification, description and assessment of the most urgent problems within the existing solid waste management system. The assessment should end up in a priority list of identified urgent problems in order to assess which problems need immediate actions, actions on short term and actions on the longer term. It is not likely that the municipality can provide funding and that the municipality has the needed capacity to solve all problems immediately so it is important that a realistic priority plan is developed as basis for the development of the SWM-SIP)*

#### 4. Solid Waste Management Service Improvement Plan (SWP-SIP)

*(Detailed description of actions to be taken each year in the four years planning period of the SWM-SIP including detailed cost estimate for equipment, facilities, campaigns, surveys and organizational changes and improvements of the financial system including fee collection etc. based on above identified major problems and the priority list. The description should include both OBA related interventions and possible other SWM improvements in the four years period. The SWM-SIP must fit into a municipality's long term strategy, if it exists. The municipality should in the development of the SWM-SIP carefully consider which actions have to be undertaken and when in order to meet technical scorecard targets and to improve cost recovery. The items described below should be considered a long list where some of the improvements will not be relevant for the actual SWM-SIP)*

- › Objectives and targets  
*(Description of the objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP, e.g. waste reduction including targets for recycling, composting etc., waste collection services provided to ?? % of the population, increased cost recovery, PSP, involving of TLOs etc. Brief description of the municipality's long term SWM strategy, if it exists)*
- › Waste collection, street cleaning and transportation systems  
*(Description of the improvement of the systems including new areas serviced, improved service level and needed new and replacement of existing vehicles and equipment etc.)*
- › Recycling and recovery systems and facilities  
*(Description of the development of the formal and informal systems)*
- › Treatment facilities  
*(Description of possible new or improvement of existing facilities)*
- › Disposal facilities  
*(Description of possible new facilities and/or extensions of the existing landfill including new equipment and replacement of existing equipment)*
- › Closure of existing dumpsite  
*(Description of possible close down/rehabilitation of existing dumpsite including needed surveys and after care system, if it takes place in the four years period)*
- › Collection, treatment and disposal of special waste types  
*(Description of possible improvements of systems for collection, treatment and disposal of special waste types as e.g. health care waste)*
- › Institutional development including private sector participation  
*Future institutional set-up and planned corporation with the TLOs, NGOs and private companies. Organization chart to be enclosed. Possible cooperation with other municipalities about solid waste management, e.g. a joint landfill facility. The section should include a description of the existence/establishment of SWM Subject Committee, dedicated section/unit for SWM, involving of PPP in MSW, development of operation guidelines for waste management facilities as well as development of recording systems - ref to technical score card)*

- › Capacity building and awareness raising  
*(Description of training and capacity building activities for the staff to be implemented in the planning period in order to improve the management of the SWM system in the municipality. Information and awareness activities to be implemented for general awareness raising and information about possible new systems)*
- › Cost estimate (investments and yearly O&M costs)  
*(Estimate of total investments and yearly operation and maintenance costs for the different facilities and activities in the existing SWM system and in new activities included in the SWM-SIP - the costs for the total SWM system in the municipality)*
- › Tariffs and affordability  
*(Sources of financing including tariff structure and development of the tariffs to cover more and more of the costs of the solid waste management system considering the affordability and the willingness to pay for the solid waste management services. Measures to increase the collection efficiency of the tariffs)*

#### 5. Implementation, monitoring and update

*(Description of procedure for implementation of the SWM-SIP plan, how it will be monitored that the plan will be followed and procedures and time frame for updating/adjustment of the plan. A time schedule - bar chart for the implementation of the SWM-SIP should be presented). ESMP for each of the proposed activities will be attached to SWM-SIP.*

## Detailed Implementation Plan for Municipalities

Below are the key milestones for detailed project implementation for municipalities

MILESTONE	EXPECTED PERIOD (MONTH FROM/TO)	
<b>Preparation</b>		
Municipality express interest in participation under the OBA project and submit documentation to SWMTSC for qualification	0	0
Municipality signs standard letter of commitment	1	1
Participating Municipality agree with SWMTSC on area of priorities for service improvement	1	2
Municipality provide SWMTSC with copies of their SWM-SIP (with EMSP attached), service delivery model, billing & collection strategies and baseline data for technical scorecard	3	6
Municipality enter into Tripartite Implementation Agreements with SWMTC and TDF	6	7
SWMTSC contract technical assistance providers to assist municipality with implementation	7	8
TDF contract the ITVA and IFVA to perform the independent verification of delivered outputs as basis for OBA subsidy disbursement	7	8
<b>SWM-SIP Implementation</b>		
Municipality institutionalize the planned tariff structure in a municipal bylaw	7	9
Municipality establish SWM Committee and dedicated SWM Unit	7	9
Municipality establish and maintain separate accounts for SWM services	7	9
Municipality contracts services of TLOs or Private Sector/NGOs if envisioned under the planned service delivery model	7	10
Municipality procures equipment envisioned under SWM-SIP	7	12
Planned improvements in waste collection, street cleaning and transportation systems	12	
Planned improvements in recycling & recovery systems and facilities	12	
Planned improvements in treatment & disposal facilities	12	
Planned capacity building and awareness raising activities	12	
<b>Service delivery, Verification and Subsidy disbursement</b>		
Municipality (or their designated service provider) deliver SWM services according to agreed terms and	12	60
Monthly reporting to SWMTSC on service provision (Technical Scorecard)	12	60
Beneficiary revenue collection	12	60
Independent technical and financial verification	15	63
Subsidy disbursement	16	64

Note: Gantt chart is given in annex T.

## Check lists

A check list for compliance of the SWM-SIP with the requirements is presented below.

<b>Checklist: Compliance of the SWM-SIP with requested content</b>			
<b>Content</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
Socio-economic background data			
› Introduction and general description of the area			
› Population and households			
› Industrial and commercial activities			
Description and analysis of existing situation on SWM)			
› Waste generation and composition			
› Waste collection, street cleaning and transportation system			
› Recycling systems			
› Treatment and disposal of solid waste			
› Hazardous waste collection, treatment and disposal			
› Organisation including private sector participation			
› Information and awareness activities			
› Waste collection and disposal tariffs			
› Finance and budget			
› Policy and legal framework			
› Description of major problems within SWM			
› Priority list			
SWM-SIP			
› Objectives and targets			
› Waste collection, street cleaning and transportation system			
› Recycling systems			
› Treatment and disposal of solid waste including closure of dumpsite			
› Collection, treatment and disposal of special waste types			
› Institutional development			
› Capacity building and awareness raising			
› Cost estimate			
› Tariffs and affordability			
Implementation, monitoring and update including bar chart			
General overall assessment			
› Does the SWM-SIP include the necessary actions/activities to achieve technical scorecard			

<b>Checklist: Compliance of the SWM-SIP with requested content</b>			
<b>Content</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
targets			
> Does the SWM-SIP include the necessary actions/activities to achieve improved cost recovery			

The following check list has been developed as a tool to help in the assessment of if the SWM-SIPs are in line with the basic principles for solid waste management in municipalities in Nepal. A number of basic principles might not be relevant considering the actions/activities in the actual SWM-SIP (N/A). If "No", an explanation must be given in the "comments".

<b>Check list: Are the activities and proposed actions in the SWM-SIP in line with the basic principles for solid waste management in municipalities in Nepal</b>				
<b>Basic principle</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Is integrated and sustainable waste management systems promoted?				
Are the 3-R principles (reduce, reuse and recycle) applied and promoted at all levels?				
Is segregation of waste at source to maximise recycling promoted?				
Are actions to stop the dumping of waste on streets or open areas for collection included (if relevant)?				
Is efficient forms for waste collection that minimise waste handling and exposure to waste promoted?				
Is environmentally acceptable disposal facility included (e.g. replacement of open waste dumps by controlled dump or sanitary landfill)?				
Is introduction of increased (max) recycling so that landfill of non-recyclable will be minimised addressed?				
Will the SWM-SIP in general result in reduced environmental impacts of waste				
Are the polluters pay principle addressed?				
Is the SWM system as a whole sustainable and affordable for the citizens in the municipality				
Is participation of local communities and the private sector encouraged?				

The municipalities are requested to develop an Environmental and Social Management Plan (ESMP) and enclose the plan as Annex to the SWM-SIP.

A check list for compliance of the ESMP with the requirements is presented below.

<b>Checklist: Compliance of the ESMP with requested content</b>			
<b>Content</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
Project description			
› Introduction and background			
› Project scope			
› Project activities			
Environmental and Social Management Plan (ESMP)			
› Scope of ESMP			
› Objectives of ESMP			
› Implementation of ESMP			
› Anticipated environmental and social impacts and mitigation measures			
➤ Methodology			
➤ Environmental screening			
➤ Impacts and mitigation measures during pre-construction activities			
➤ Environmental impacts and mitigation measures during construction			
➤ Social impacts and mitigation measures during construction			
➤ Environmental impacts and mitigation measures during O&M			
➤ Social impacts and mitigation measures during O&M			
➤ Environmental impacts and mitigation measures during closure and aftercare			
➤ Social impacts and mitigation measures during closure and aftercare			
› Overview of ESMP (table)			
› Monitoring (table)			

# Appendix H Environmental and Social Management Framework

*Separate document*

## Appendix I Term Sheet for Subsidiary Agreement between MoF and TDF

### Term Sheet - Subsidiary Agreement between MOF and TDF

PARTIES	The Ministry of Finance ("the Recipient") and the Town Development Fund ("the Project Implementing Entity").
SCOPE OF AGREEMENT	<p>The Subsidiary Agreement entered between MOF and TDF describes:</p> <ul style="list-style-type: none"> <li>› The roles and responsibilities of MOF and TDF in relation to project implementation.</li> <li>› The fiduciary guidelines regarding the use of GPOBA's grant (including allowing transfer of funds from a 'designated OBA account' operated by TDF, rather than through the treasury).</li> <li>› The financial resources that MOF will make available to the Advances Facility which TDF will manage.</li> <li>› Procedures for securing repayments to the Advances Facility via intercepts of future municipal grant revenues.</li> </ul>
CONDITIONS PRECEDENT	<ul style="list-style-type: none"> <li>› The Grant Agreement between the World Bank and the Recipient has been signed.</li> <li>› The Recipient and the Project Implementing Entity have adopted the Project Operations Manual satisfactory to the World Bank.</li> <li>› The Memorandum of Understanding has been executed on behalf of the Project Implementing Entity and SWMTSC.</li> </ul>
ROLES AND RESPONSIBILITIES	<ul style="list-style-type: none"> <li>› The Recipient (MOF) shall:</li> <li>› Exercise its rights under the Subsidiary Agreement in such manner as to protect the interests of the Recipient and the World Bank and to accomplish the purposes of the Grant.</li> <li>› Except as the World Bank shall otherwise agree, not assign, amend, abrogate or waive the Subsidiary Agreement or any of its provisions.</li> <li>› Ensure that, in the event that any provision of the Subsidiary Agreement shall be in conflict with any provision of the Grant Agreement, the provisions of the Grant Agreement shall prevail.</li> <li>› Make the proceeds of the Grant available to the Project Implementing Entity.</li> <li>› Provide funding to the Advances Facility as per requirement to TDF and SWMTSC to start activities mentioned in project component 2 and 3.</li> <li>› Provide funding to the Advances Facility in sufficient amount to enable Participating Municipalities to meet justifiable pre-financing needs. The MoF and TDF may agree to specific limits on drawings from the Advances Facility by any one municipality (e.g. no more than 30% of available subsidy).</li> <li>› Re-direct, in case of default by a Participating Municipality against obligations owed to the TDF Advances Facility, the balance owed from a municipality's unconditional grant allocation to the Advances</li> </ul>

	<p>Facility on the defaulting municipality's behalf.</p> <ul style="list-style-type: none"> <li>&gt;</li> </ul> <p>MOF shall not</p> <ul style="list-style-type: none"> <li>&gt; Require TDF to refund any amount of money allocated to the Advances Facility that a Participating Municipality has not refunded.</li> <li>&gt; Fail to intercept a Participating Municipality's other grant revenues in the event of default on any drawings from the Advances Facility.</li> </ul> <hr/> <p>The Project Implementing Entity (TDF) shall:</p> <ul style="list-style-type: none"> <li>&gt; Maintain, and cause to be maintained, throughout the period of implementation of the Project, a Project team, with terms of reference, staffing and other resources acceptable to the World Bank, to be responsible for implementing the Project.</li> <li>&gt; Ensure that, unless the World Bank shall otherwise agree, except in case of unsatisfactory performance, or as required by the Recipient's laws, the above-mentioned Project team members shall not be transferred to other positions until completion of the Project, and, in the case of the accounts and finance officers, no such transfer shall occur until at least six (6) months after the Closing Date or submission by the Recipient of the final audited Financial Statements, whichever occurs later.</li> <li>&gt; Carry out the Project with due diligence and efficiency and in accordance with the Project Operations Manual, the Environmental and Social Management Framework, and with appropriate administrative, management, financial, social and environment practices acceptable to the World Bank, including the Anti-Corruption Guidelines applicable to the recipient of the Grant proceeds other than the Recipient, and provide, promptly as needed, the funds required for the purpose. In the event that any provision of the Project Operations Manual shall conflict with any provision under this Agreement, the terms of this Agreement shall prevail.</li> <li>&gt; Enter into a Memorandum of Understanding with SWMTSC under terms and conditions satisfactory to the Recipient.</li> <li>&gt; Pay Service Delivery Subsidies to the Participating Municipalities as per the Grant Agreement.</li> <li>&gt; Hire the Independent Technical Verification Agent and the Independent Financial Verification Agent under terms of references and with qualifications acceptable to the World Bank.</li> <li>&gt; Ensure that an acceptable technical verification is obtained from the Independent Technical Verification Agent (ITVA) followed by acceptable financial verification by the Independent Financial Verification Agent, as set out in the Project Operations Manual, prior to providing Output-based Service Delivery Subsidy to the Participating Municipalities.</li> <li>&gt; Provide pre-financing to Participating Municipalities via the Advances Facility.</li> <li>&gt; Maintain a financial management system and prepare financial statements in accordance with consistently applied accounting standards acceptable to the World Bank, both in a manner adequate to reflect its operations and financial conditions, including the</li> </ul>
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	<p>operations, resources and expenditures related to the Project.</p> <ul style="list-style-type: none"> <li>› Have such financial statements audited by independent auditors acceptable to the World Bank, in accordance with consistently applied auditing standards acceptable to the World Bank, and furnish the statements as so audited to the Recipient and the World Bank not than later than six (6) months after the end of its fiscal year.</li> <li>› Enable the Recipient and the World Bank to inspect its operation and any relevant records and documents.</li> <li>› Prepare and furnish to the Recipient and the World Bank all such information as the Recipient or the World Bank shall reasonably request relating to the foregoing.</li> <li>› Maintain policies and procedures adequate to enable it to monitor and evaluate on an ongoing basis, in accordance with indicators agreed with the World Bank for the carrying out of the Project.</li> <li>› Prepare and furnish to the Recipient and to the World Bank, trimester progress reports.</li> <li>› Provide implementation support funds to the SWMTSC to finance capacity building and technical advisory services to support Municipalities under Component 2 of the project in accordance with the Memorandum of Understanding and the Project Operations Manual.</li> </ul> <p>TDF shall not</p> <ul style="list-style-type: none"> <li>› Use funds in the Advances Facility for any other purpose unless instructed to do so by MoF.</li> <li>› Require Participating Municipalities to pay any fee for accessing the Advances Facility unless otherwise agreed with MoF.</li> </ul>
SPECIFIC SECTIONS	PROJECT OPERATIONS MANUAL FUNDS AND INSTITUTIONAL ARRANGEMENTS PROJECT IMPLEMENTATION MEMORANDUM OF UNDERSTANDING TRIPARTITE PROJECT IMPLEMENTATION AGREEMENT FINANCIAL MANAGEMENT ITVA AND IFVA TECHNICAL ASSISTANCE SAFEEGUARDS ANTI-CORRUPTION REPORTING
STANDARD SECTIONS	NOTICES RESOLUTION OF DISPUTES TERMINATION MISCELLANEOUS PROVISIONS
APPENDICES / SCHEDULES	SCHEDULE 1 - PROJECT OPERATIONS MANUAL SCHEDULE 2 - PROCUREMENT SCHEDULE 3 - FINANCIAL MANAGEMENT

## Appendix J Term Sheet for MoU between TDF and SWMTSC

### Term Sheet - MoU between TDF and SWMTSC

<b>PARTIES</b>	TDF, SWMTSC
<b>SCOPE OF AGREEMENT</b>	<p>The Memorandum of Understanding (MoU) between TDF (the Project Implementing Entity) and SWMTSC (the Technical Implementing Partner) describes:</p> <ul style="list-style-type: none"> <li>› The roles and responsibilities of TDF as implementing agency entity.</li> <li>› The roles and responsibilities of SWMTSC as a Technical Implementing Partner.</li> <li>›</li> </ul>
<b>CONDITIONS PRECEDENT</b>	<ul style="list-style-type: none"> <li>› The signature of the Grant Agreement between the World Bank and the Ministry of Finance (the Recipient).</li> <li>› The signature of the Subsidiary Agreement between the Ministry of Finance and the TDF.</li> </ul>
<b>ROLES AND RESPONSIBILITIES</b>	<p>The TDF shall:</p> <ul style="list-style-type: none"> <li>› Make the proceeds of the Project available to the Participating Municipalities under a Tripartite Project Implementation Agreements (TPIA) to be entered into jointly with the SWMTSC and each Participating Municipality, with terms and conditions satisfactory to the Recipient and the World Bank</li> <li>› Hire the Independent Technical Verification Agent and the Independent Financial Verification Agent under terms of references and with qualifications acceptable to the World Bank</li> <li>› Assume a lead role in advising Participating Municipalities on the financial aspects of solid waste management services and SWM-SIPs</li> <li>› Establish and manage an Advances Facility to provide pre-financing resources to Participating Municipalities under terms agreed with MoF</li> <li>› At all times cooperate and share project information freely with SWMTSC</li> <li>›</li> </ul>
	<p>The SWMTSC shall:</p> <ul style="list-style-type: none"> <li>› Be responsible for planning and supervising the technical aspects of the Project</li> <li>› Take a lead role in advising Participating Municipalities on the technical aspects of solid waste management services and SWM-SIPs</li> <li>› Carry out the Project with due diligence and efficiency and in accordance with the Project Operations Manual</li> <li>› Be responsible for overall technical monitoring performance of the Project</li> <li>› Monitor the performance of the Participating Municipalities in accordance with the Technical Scorecards</li> <li>› Provide technical support to municipalities, under Component 2 of</li> </ul>

	<p>the project</p> <ul style="list-style-type: none"> <li>› Coordinate with other implementation support to municipalities if required</li> <li>› Support TDF in preparing procurement of the ITVA and review of technical verification reports</li> <li>› Procure and manage consultants for Technical support to municipalities as required, and oversee the activities of the Technical Consultants</li> <li>› At all times cooperate and share project information freely with TDF</li> <li>›</li> </ul>
APPENDICES / SCHEDULES	

## Appendix K Term Sheet for Tripartite Project Implementation Agreements (TPIAs)

### Term Sheet - Tripartite Project Implementation Agreements (TPIAs)

<b>PARTIES</b>	TDF, SWMTSC, MUNICIPALITY
<b>SCOPE OF AGREEMENT</b>	<p>The Tripartite Project Implementation Agreements (TPIAs) between TDF, SWMTSC and the Participating Municipalities describes:</p> <ul style="list-style-type: none"> <li>› The roles and responsibilities of TDF, SWMTSC and the Participating Municipality.</li> <li>› The procedures for OBA subsidy calculation and disbursement.</li> <li>› The role of the ITVA and the IFVA in verification of outputs.</li> <li>› The required reporting arrangements by the Participating Municipality under the project.</li> <li>›</li> </ul>
<b>CONDITIONS PRECEDENT</b>	<ul style="list-style-type: none"> <li>› The signature of the grant agreement between the World Bank and the Ministry of Finance and the subsidiary agreement between the Ministry of Finance and the TDF.</li> <li>› The signature of the Subsidiary Agreement between the Ministry of Finance and the TDF.</li> <li>› The Signature of the Memorandum of Understanding between SWMTSC and TDF.</li> <li>› The municipalities have submitted required documents to confirm their eligibility for participating in the project and signed letters of commitment.</li> <li>›</li> </ul>
<b>ROLES AND RESPONSIBILITIES</b>	<p>The TDF shall:</p> <ul style="list-style-type: none"> <li>› Pay Service Delivery Subsidies to Participating Municipalities based on agreed annual multiples of verified Beneficiary Revenue collected, provided that solid waste management services meet verified minimum performance criteria on the Technical Scorecard.</li> <li>› Provide pre-financing to participating municipalities, if required, via the Advances Facility under terms agreed with MoF.</li> <li>› Ensure compliance with the Financial Management and Disbursement guidelines for the OBA project.</li> <li>› Monitor compliance with the Results Framework and Monitoring guidelines for the OBA project.</li> <li>› Contract the ITVA and IFVA to perform the independent verification of delivered outputs as basis for OBA subsidy disbursement.</li> <li>› Oversee timely financial verification by the IFVA and review verification reports submitted by IFVA.</li> <li>› Monitor procurement under the project.</li> <li>› Monitor compliance with the ESMF with support of SWMTC.</li> <li>› Conduct audit of the project as per grant agreement.</li> </ul>

	<ul style="list-style-type: none"> <li>› Advise the Participating Municipality as needed on the financial management aspects of solid waste management services. This will include particular attention on billing, collection, and tariff management.</li> <li>›</li> <li>› TDF shall not:</li> <li>› Attempt to influence or otherwise bias the activities of the ITVA or IFVA.</li> <li>› Pay subsidies unless the ITVA and IFVA have satisfactorily verified Participating Municipality performance.</li> <li>› Pay subsidies according to any other formula not explicitly mentioned in the TPIA.</li> <li>› Withhold or otherwise delay payment of subsidies that a Participating Municipality has earned. The exception to this principle shall occur when a Participating Municipality has drawn pre-financing from the Advances Facility and has pledged subsidies earned to secure repayment.</li> <li>› Require any form of payment from the Participating Municipalities for subsidy disbursements, or reviews by the ITVA or IFVA.</li> <li>›</li> </ul>
	<p>The SWMTSC shall:</p> <ul style="list-style-type: none"> <li>› Contract technical assistance providers to assist municipalities with implementation. For the avoidance of doubt, technical assistance providers shall owe their duty of care to the Participating Municipalities.</li> <li>› Advise the Participating Municipalities on area of priorities for service improvement.</li> <li>› Advise Participating Municipalities on service delivery models and billing and collection strategies.</li> <li>› Review SWM-SIP, service delivery model, billing &amp; collection strategy and baseline data for Technical Scorecard provided by Participating Municipalities.</li> <li>› Inform Participating Municipalities on the methodology for determining subsidy amounts under the OBA project.</li> <li>› Advise Participating Municipalities on methodologies for the determination of their SWM fee structure.</li> <li>› Advise the Participating Municipalities on individual implementation plan for the OBA project including annual targets under Technical Scorecard, government contribution, cost recovery targets, planned tariff increases and agree on resulting Annual Subsidy Multiplier.</li> <li>› Monitor and quality assure the implementation of the SWM-SIP and the performance of the OBA project in the Participating Municipalities.</li> <li>› Support municipalities to ensure compliance with the Environmental and Social Management Framework for the OBA project.</li> <li>› Oversee timely technical verification by the ITVA and review</li> </ul>

	<p>verification reports submitted by ITVA.</p> <ul style="list-style-type: none"> <li>› Supervise consultants for Technical Assistance to municipalities</li> <li>› Call and host quarterly meetings with Participating Municipalities and the TDF.</li> </ul> <p>SWMTSC shall not:</p> <ul style="list-style-type: none"> <li>› Attempt to influence or otherwise bias the activities of the ITVA or IFVA.</li> <li>› Require any form of payment from the Participating Municipalities for Technical Assistance Services or reviews by the ITVA or IFVA.</li> <li>› Withhold or otherwise delay the provision of technical assistance services to municipalities unless for performance reasons agreed in the TPIA.</li> <li>›</li> </ul>
	<ul style="list-style-type: none"> <li>› The Participating Municipalities shall:</li> <li>› Define and agree priority areas for service improvement in consultation with SWMTSC.</li> <li>› Prepare and submit SWM-SIP to SWMTSC/TDF</li> <li>› Formulate a SWM committee responsible for monitoring and evaluation of Project activities within the Municipality and establish a dedicated SWM Unit responsible for day to day provision of solid waste management services.</li> <li>› Establish and maintain separate account for SWM services.</li> <li>› Prepare in consultation with SWMTSC on individual implementation plan for the OBA project including annual targets under Technical Scorecard, government contribution, cost recovery targets, planned tariff increases and agree on resulting Annual Subsidy Multiplier.</li> <li>› Draw from Advances Facility if required for pre-financing project expenditures against security in future OBA subsidy revenues and unconditional grants from the Ministry of Finance.</li> <li>› Implement service improvements under the OBA project in accordance with the SWM-SIP, the provisions of the Environmental and Social Management Framework, and all plans prepared thereunder, and any additional social and environmental safeguard measures described in the Project Operations Manual.</li> <li>› Communicate with TLOs and Beneficiaries.</li> <li>› Contract services of TLOs or Private Sector / NGOs if envisioned under the planned service delivery model.</li> <li>› Procure equipment (vehicles, waste collection bins) if required only.</li> <li>› Facilitate ITVA and IFVA independent verification missions by coordinating with SWMTSC.</li> <li>› Request TDF to initiate OBA Subsidy Transfer upon reception of acceptable Verification Report from the ITVA and IFVA.</li> <li>› Follow up on any issues raised by the ITVA and IFVA in the</li> </ul>

	<p>Verification Report.</p> <ul style="list-style-type: none"> <li>› Prepare and submit progress reports to SWMTSC and TDF.</li> <li>› Form a taskforce to support SWM unit in implementing OBA project and designate a member of taskforce as a focal person.</li> <li>› Attend and participate in the quarterly meetings and other meetings called by SWMTSC, and TDF.</li> <li>›</li> </ul> <p>Participating Municipalities shall not:</p> <ul style="list-style-type: none"> <li>› Give false information to SWMTSC, TDF, the ITVA, or the IFVA. Attempt to influence or otherwise bias the activities of the ITVA or IFVA.</li> <li>› Unilaterally change SWM-SIPs during the project implementation period without notification, and consultation, with SWMTSC and TDF.</li> <li>›</li> </ul>
SPECIFIC SECTIONS	<p>OBA SUBSIDY DISBURSEMENT</p> <ul style="list-style-type: none"> <li>› The Participating Municipalities will only be eligible to earn up to a maximum Output-based Service Delivery Subsidy in any given year regardless of the amount of verified Beneficiary Revenue collected.</li> <li>› No Participating Municipality shall receive an Output-based Service Delivery Subsidy unless and until the TDF has received a Technical Verification Report, acceptable to the Project Implementing Entity (TDF), and the World Bank, showing that the Municipality has achieved the required minimum service performance.</li> <li>›</li> </ul> <p>TECHNICAL ASSISTANCE</p> <ul style="list-style-type: none"> <li>› After the First Year, no Participating Municipality shall receive any technical assistance under Component 2 of the Project unless and until the Project Implementing Entity has received at least one Technical Verification Report, acceptable to the Project Implementing Entity, and the World Bank, showing that the Municipality has achieved the required minimum service performance as specified in the Schedules.</li> </ul>
STANDARD SECTIONS	<p>NOTICES RESOLUTION OF DISPUTES TERMINATION MISCELLANEOUS PROVISIONS</p>
APPENDICES / SCHEDULES	<p>ONE: PROJECT OPERATIONS MANUAL (Nepali version) TWO: TECHNICAL SCORECARD BASELINE DATA THREE: OBA SUBSIDY CALCULATION AND DISBURSEMENT FOUR: VERIFICATION AND DISBURSEMENT PROCEDURES FIVE: REPORTING FORMATS SIX: THE SWM-SIP ESTABLISHED FOR THE PARTICIPATING</p>

	<p>MUNICIPALITY SEVEN: THE AGREED IMPLEMENTATION PLAN FOR THE OBA PROJECT IN THE INDIVIDUAL MUNICIPALITY</p>
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## Appendix L ToR for Project Steering Committee and TORs for Municipal SWM committee and dedicated SWM unit

### **OUTPUT-BASED AID FOR MUNICIPAL SOLID WASTE IN NEPAL**

**[MONTH, YEAR]**

#### **PROJECT STEERING COMMITTEE**

#### **TERMS OF REFERENCE**

##### **Overview**

The World Bank / Global Partnership for Output Based Aid (GPOBA) have approved the project 'Output-Based Aid in Municipal Solid Waste Management in Nepal' (the OBA project). The objective of the OBA project is to improve access to high quality and financially sustainable SWM services in Participating Municipalities in Nepal. The OBA project is implemented in parallel with the 'Urban Governance and Development Program/Emerging Towns Project' (UGDP/ETP), but it does not formally constitute a component under the UGDP/ETP.

The Town Development Fund (TDF) will together with the Solid Waste Management Technical Support Centre (SWMTSC) be the central government counterparts under the OBA project.

The Project Steering Committee will work closely with the TDF and the SWMTSC to ensure that the project is implemented as planned in a well coordinated manner.

##### **Mandate**

The mandate of the Steering Committee is:

1. To provide advice and support the TDF and SWMTSC in their roles under the project
2. To ensure coordination with other relevant initiatives in the networks of the Steering Committee members
3. To review the quarterly reporting prepared by SWMTSC to TDF under the project
4. To review and approve the annual reporting prepared by TDF to the Donor Partners (initially the World Bank / GPOBA) under the project
5. To monitor the progress in project implementation and where necessary recommend actions to increase the effectiveness of the project
6. To advise on mitigation measures for any challenges of implementation encountered by TDF and SWMTSC
7. To assist in resolving strategic level issues and risks that may jeopardize the effective implementation of the project

##### **Deliverables**

Minutes of Quarterly meetings

Approved annual reporting to the Donor Partners (drafted by TDF)

### **Composition**

The committee will be chaired by the Secretary of MoUD, and include representation from TDF, SWMTSC, MoF, MoFALD, and the National Planning Commission.

### **Function**

The committee will meet as often as necessary, but at least quarterly, and report at least annually to the Donor Partners on the project progress. Meeting frequency will be determined on the basis of recognized timelines. The meetings are expected to typically be held at MoUD.

### **Timelines**

The identified deliverables will be completed no later than [date, year] at which time the committee shall be disbanded unless MoUD approves an extension.

### **Budget**

For the term of the committee, it is expected that the committee would require a budget of NRP [...] to be expended on clerical support, photocopying, newspaper notices, production and dissemination of educational materials, and the hosting of a number of public meetings.

**[...] MUNICIPALITY**  
**[MONTH, YEAR]**  
**SOLID WASTE MANAGEMENT COMMITTEE**  
**TERMS OF REFERENCE**

**Overview**

In developing its Solid Waste Management system, [...] Municipality has identified the need to form a Solid Waste Management Committee, to advise and support the Chief Executive Officer and the Municipal Administration in relation to the Solid Waste Management system in general and the implementation of the project Output-Based Aid in Municipal Solid Waste Management in Nepal in the municipality in particular.

**Mandate**

The mandate of the SWM Committee is:

1. In relation to SWM in general:
  - a. To provide advice to the Chief Executive Officer and the Municipal Administration regarding Solid Waste Management
  - b. To establish a Solid Waste Management Unit under the municipal administration with mandate, staff allocation and allocated budget resources.
2. In relation to the municipality's participation in the project Output-Based Aid in Municipal Solid Waste Management in Nepal:
  - a. To advise and support the Chief Executive Officer and the Municipal Administration in relation to their obligations under the project
  - b. To approve the SWM-SIPs, service delivery models, billing & collection strategies and baseline data for the Technical Scorecards
  - c. To oversee the institutionalization of the planned tariff structure in a municipal bylaw
  - d. To review the regular reporting by the Solid Waste Management Unit

**Deliverables**

Quarterly reporting to the Chief Executive Officer

Annually reporting to the Council

**Composition**

The committee will consist of up to [...] members of the community with one appointed Councilor and one appointed Staff support person. The chair will be chosen from amongst the community members and members of [...] are encouraged to apply.

**Function**

The committee will meet as often as necessary, but at least quarterly, and report at least annually to Council on its work. Meeting frequency will be determined on the basis of recognized timelines. The meetings are expected to typically be held at municipal hall.

### **Timelines**

The identified deliverables will be completed no later than [date, year] at which time the committee shall be disbanded unless Council approves an extension.

The implementation of the OBA project will be outlined as a top priority.

### **Budget**

For the term of the committee, it is expected that the SWM Committee would require a budget of NRP [...] to be expended on clerical support, photocopying, newspaper notices, production and dissemination of educational materials, and the hosting of a number of public meetings.

Additional funding may be required in relation to the development, tendering and monitoring of service contracts with TLOs or Private Sector / NGOs if envisioned under the planned service delivery models, although this cost is considered to be outside the terms of reference for this committee.

**[...] MUNICIPALITY**  
**[MONTH, YEAR]**  
**SOLID WASTE MANAGEMENT UNIT**  
**TERMS OF REFERENCE**

**Overview**

In developing its Solid Waste Management system, [...] Municipality has identified the need to form a Solid Waste Management Unit under the Municipal Administration and with direct reference Chief Executive Officer to be responsible for the day to day activities in relation to the Solid Waste Management system in general and for the implementation of the project Output-Based Aid in Municipal Solid Waste Management in Nepal in the municipality in particular.

**Mandate**

The mandate of the SWM Unit is:

1. In relation to SWM in general:
  - a. To act in all matters pertaining to Solid Waste Management.
  - b. To report regularly to the Chief Executive Officer and the Solid Waste Management Committee established to advise and support the Chief Executive Officer and the Municipal Administration in matters related to Solid Waste Management.
2. In relation to the municipality's participation in the project Output-Based Aid in Municipal Solid Waste Management in Nepal to act on behalf of the Chief Executive Officer as the designated representative of the municipality, who will be the point of contact on matters pertaining to the OBA Project and hereunder to:
  - a. Define, in consultation with SWMTSC, set the priority areas SWM service improvements in the municipality
  - b. Establish and provide SWMTSC with copies of their SWM-SIPs (with EMSP attached), service delivery models, billing & collection strategies and baseline data for the Technical Scorecards
  - c. Negotiate and agree with SWMTSC on individual implementation plans for the OBA project including annual targets under Technical Scorecard, committed government contributions, cost recovery targets, planned tariff increases and resulting Annual Subsidy Multipliers
  - d. Implement the tariff structure as approved by the municipal council.
  - e. Support accounts section to establish and maintain separate accounts for SWM services
  - f. Support executive officer in contracting services of TLOs or Private Sector / NGOs if envisioned under their planned service delivery models
  - g. Communicate with TLOs and households on project implementation
  - h. Support executive officer procure equipment (vehicles, waste collection bins)

- i. Monitor and regulate their service provider if service is contracted out to TLOs or private sector.
- j. Support revenue department/section to collect beneficiary revenues through designated SWM fees
- k. Report monthly to SWMTSC on service provision (Technical Scorecards) and beneficiary revenue collection
- l. Report quarterly/trimester to SWMTSC on ESMP
- m. Coordinate with SWMTSC on the independent technical verification of outputs by the ITVA
- n. Follow up on any issues raised by the ITVA in the Verification Report and request re-verification in case of failed technical verification
- o. Follow up on any issues raised by the IFVA in the Verification Report.
- p. Request TDF to initiate OBA Subsidy Transfer upon reception of acceptable Verification Report from the ITVA and IFVA
- q. Prepare and submit progress reports to SWMTSC
- r. Attend and participate in the quarterly meetings and other meetings called by SWMTSC

### **Deliverables**

Monthly reporting to the Chief Executive Officer

Quarterly reporting to the Solid Waste Management Committee

Specific reporting under the OBA project:

Within 10 days of the beginning of each quarter submit quarterly reports to SWMTSC with the following information:

- Status of SWM-SIP implementation including the ESMP
- Status of OBA project implementation
- SWM fee charged (by category) and total beneficiary revenues collected
- Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA
- Status on invoicing of OBA subsidy
- Total OBA subsidy invoiced and disbursed to date
- Issues raised by the ITVA and IFVA in the Verification Reports
- Expected activities for the next two quarters specifying any planned procurement or contracting
- Details on any problems encountered
- Filled out Technical Scorecards for the Quarter (to be verified)
- Revised Technical Scorecards for any previous Quarter for which re-verification is requested

Within 30 days of the beginning each Fiscal Year, submit annual reports to SWMTSC with the following information:

- Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)
- Progress on the SWM-SIP including ESMP
- Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

### **Composition**

The Unit will consist of up to [3-5] members of the Municipal Administration and their regular consultants. The Chairman of the Unit will be mandated to act on behalf of the Chief Executive Officer as the designated representative of the municipality, who will be the point of contact on matters pertaining to the OBA Project.

### **Function**

The Unit will meet as often as necessary, but at least weekly, and report at least monthly to the Chief Executive Officer on its work. Meeting frequency will be determined on the basis of recognized timelines. The meetings are expected to typically be held at municipal offices.

### **Timelines**

The identified deliverables will be completed no later than [date, year] at which time the Unit shall be disbanded unless Council approves an extension.

The implementation of the OBA project will be outlined as a top priority.

### **Budget**

For the term of the Unit, it is expected that the SWM Unit would require a budget of NRP [...] to be expended on clerical support, photocopying, newspaper notices, production and dissemination of educational materials, and the hosting of a number of public meetings.

Additional funding may be required in relation to the development, tendering and monitoring of service contracts with TLOs or Private Sector / NGOs if envisioned under the planned service delivery models, although this cost is considered to be outside the terms of reference for this Unit.

## Appendix M Term Sheet for Agreements between Municipality and TLOs

### Term Sheet - Agreement between Municipality and TLO

<b>PARTIES</b>	Municipality and TLO
<b>SCOPE OF AGREEMENT</b>	The Agreement between the Municipality (the Department) and the Tole Lane Organization (the TLO) is an agreement for involvement of TLOs in municipal waste management related activities.
<b>ROLES AND RESPONSIBILITIES</b>	<p>The Department shall:</p> <ul style="list-style-type: none"> <li>› Remain overall responsible for waste management in the municipality.</li> <li>› Transfer day to day responsibilities for certain defined municipal waste management related activities to the TLO.</li> <li>› Designate collection points for municipal waste collection services</li> </ul>
	<p>The TLO shall:</p> <ul style="list-style-type: none"> <li>› Assume the day to day responsibilities for certain defined municipal waste management related activities</li> <li>› Only dispose solid waste to the designated collection points.</li> </ul>
<b>SPECIFIC SECTIONS (all optional)</b>	<p><b>COLLECTION OF WASTE</b></p> <ul style="list-style-type: none"> <li>› The TLO shall in neighborhoods with limited access, which are served by communal containers, arrange for residents to carry their own waste to the communal container or organize their own pre-collection system.</li> <li>› The TLO shall upon request from the Department assist in the distribution of waste collection containers for door to door collection.</li> <li>› The TLO shall upon request from the Department assist in the identification of suitable points for location of communal waste containers.</li> </ul> <p><b>STREET SWEEPING AND DRAIN CLEANING</b></p> <ul style="list-style-type: none"> <li>› The TLO shall arrange for residents to sweep the curb in front of their own houses or businesses.</li> <li>› The TLO shall organize street sweeping and drain cleaning on the Main streets listed in Schedule 2 at least [...] times/month and on the Secondary streets listed in Schedule 2 at least [...] times/month.</li> <li>› The waste from street sweeping shall be deposited within the solid waste collection vehicle servicing the area or within the closest communal container for solid waste collection.</li> </ul> <p><b>3R ACTIVITIES</b></p> <ul style="list-style-type: none"> <li>› The TLO shall upon agreement with the Department assist in the identification of suitable and interested Generators for distribution of home composting containers and subsequent provision of initial training and act as a contact point for the generators for encountered operational problems</li> </ul>

	<p><b>INFORMATION CAMPAIGNS</b></p> <ul style="list-style-type: none"> <li>› The TLO shall educate the Generators so that they place their waste outside for collection only at the scheduled time and place of pick-up, and distribute informative brochures provided by the Department, about the rights and responsibilities of the Generators, including information regarding allowable waste and defining prohibited hazardous waste.</li> </ul> <p><b>COLLECTION OF SERVICE FEE</b></p> <ul style="list-style-type: none"> <li>› The TLO shall have the right and obligation to collect the Municipal Waste Collection Services Fee from the Generators in accordance with the payment provisions outlined in Schedule 3.</li> <li>› The TLO shall monthly pay [90] percent of the collected Municipal Waste Collection Services Fee to the Department, while retaining the remaining [10] percent for coverage of their own operational costs under the present agreement.</li> <li>› If an obligation for the TLO to perform Street Sweeping and Drain Cleaning Services on public roads is included under the Agreement a separate payment will be made by Department in accordance with the payment levels shown in Schedule 3.</li> </ul>
<p>APPENDICES / SCHEDULES</p>	<p>SCHEDULE 1 - AREA FOR TLO WASTE COLLECTION                  SCHEDULE 2 - AREA FOR TLO STREETSWEEPING                  SCHEDULE 3 - PAYMENT PROVISIONS</p>

## Appendix N Term Sheet for Agreement between Municipality and Private Sector/NGO

### Term Sheet - Agreement between Municipality and Private Sector/NGO

<b>PARTIES</b>	Municipality and Private Sector/NGO
<b>SCOPE OF AGREEMENT</b>	The Agreement between the Municipality (the Department) and the Private Sector / NGO entity (the Contractor) is a service agreement for involvement of small and mid size contractors and NGOs in municipal waste collection services.
<b>ROLES AND RESPONSIBILITIES</b>	<p>The Department shall:</p> <ul style="list-style-type: none"> <li>› Remain overall responsible for waste management in the municipality.</li> <li>› Transfer the day to day responsibility for collect, remove, transport, and dispose of all solid waste to the Contractor.</li> <li>› Provide and designate a safe and accessible disposal site.</li> </ul>
	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>› Assume the day to day responsibility for collect, remove, transport, and dispose of all solid waste to the Contractor.</li> <li>› Only dispose solid waste to the designated disposal site.</li> </ul>
<b>SPECIFIC SECTIONS</b>	<p><b>SERVICES</b></p> <ul style="list-style-type: none"> <li>› The Contractor shall collect, remove, transport, and dispose of all solid waste as defined herein and by Municipal Ordinance No [...] and shall be solely responsible to furnish all labor, vehicles, tools, equipment, bulk storage containers and any other necessary facilities, in a manner consistent with the Agreement and considered good professional practice, and to the satisfaction of the Department.</li> <li>› The Contractor shall educate the Generators so that they place their waste outside for collection only at the scheduled time and place of pick-up, and provide informative brochures, following written approval by the Department, about the rights and responsibilities of the Generators, including information regarding allowable waste and defining prohibited hazardous waste.</li> <li>› Solid waste collections at the premises of Generators shall not start before [...] a.m. or continue after [...] p.m., and street sweeping or drain cleaning in public areas shall not start before [...] a.m. or continue after [...] p.m. of any day</li> <li>› The Contractor shall at all times properly discharge solid wastes only to officially designated transfer and disposal facilities. No dumping of solid wastes shall be made to drains, sewers, open lands, quarries, rivers, channels, swamps, or other locations not officially designated. The Contractor shall at all times supervise its workers and inspect their activities to insure that unauthorized dumping does not occur.</li> <li>› The Contractor shall pay officially established tipping fees at officially designated disposal and transfer sites.</li> </ul>

	<p><b>OWNERSHIP OF SOLID WASTE</b></p> <ul style="list-style-type: none"> <li>› Prior to disposal from any Generator, solid waste is owned by the Generator or the owner of the property where the Generator is located.</li> <li>› All solid waste discharged from Generator's premises, including all solid waste which is improperly discharged shall be owned by the local government. No solid waste handled by the Contractor shall be used directly by the Contractor for land reclamation, recycling or resource recovery, or sold to others for land reclamation, recycling or resource recovery, without the written consent of the Department.</li> <li>› Any residential Generator owner may use, recycle, or recover with the prior written approval of the Department (such as by back-yard composting of kitchen wastes) its waste on the Generator's property when such wastes do not create a public nuisance or adversely affect the human health or the environment.</li> </ul>
	<p><b>ZONES &amp; SERVICES</b></p> <ul style="list-style-type: none"> <li>› The Zone of service to be covered under this Agreement is defined in Schedule 1. The Contractor shall be fully responsible for the cleanliness of the Zone, including removal of all non-hazardous solid waste from establishments, street sweeping, and drain cleaning.</li> <li>› For <u>residential</u> neighborhoods, designated in Schedule 1, the Contractor shall provide solid waste collection service on a door-to-door curbside or bell system basis at least [2] times/week.</li> <li>› For <u>residential/commercial</u> neighborhoods, designated in Schedule 1, the Contractor shall provide solid waste collection on a door-to-door curbside basis at least [6] times/week.</li> <li>› For densely populated neighborhoods with <u>limited access</u>, as designated in Schedule 1, the Contractor shall provide solid waste collection service on a communal container basis at least [2] times/week. Communal collection points shall be spaced no further than [...] meters from any waste Generator's premises.</li> <li>› For neighborhoods with limited access which are served by communal containers, residents are expected to carry their own waste to the communal container or organize their own pre-collection system. The Contractor is allowed to offer pre-collection services within these neighborhoods on a direct fee for service subscription basis.</li> <li>› Main streets listed in Schedule 2 shall be swept at least [...] times/month. Secondary streets listed in Schedule 2, shall be swept at least [...] times/month. Street sweepers shall deposit the wastes they collect within the solid waste collection vehicle servicing the same area or within the closest communal container for solid waste collection.</li> <li>› Litter bins shall be placed by the Contractor at least every [...] meters along both sides of main streets listed in Schedule 2. The Contractor shall have responsibility for emptying these bins each day that the waste generator premises along the street are being provided with solid waste collection service. The Contractor shall maintain, at its own expense, these litter bins and replace them as necessary.</li> </ul>

	<ul style="list-style-type: none"> <li>› The Contractor shall be responsible for the cleaning of small open drains within its designated zone, so that the Contractor is completely responsible for the cleanliness of the area to be served. Cleaning of small open drains shall be done at least [...] times/month, and blockages shall be immediately cleared.</li> </ul>
	<p><b>PAYMENT TO CONTRACTOR</b></p> <ul style="list-style-type: none"> <li>› Payment for Collection Services performed will be made by the Generators in accordance with the payment ceilings outlined in Schedule 3. Where no payment ceiling is indicated in Schedule 3, the Contractor will charge for services a fair market rate to be negotiated directly between Contractor and Generator.</li> <li>› Payment for Street Sweeping and Drain Cleaning Services performed will be made by Department in accordance with the payment levels shown in Schedule 3.</li> <li>› Collected revenues from Generators which exceed the sum of Contractor’s documented operating costs for Collection Services and a profit margin of [...] percent shall be deemed a subsidy for Collection Services to Generators whose payment is inadequate to cover their proportionate share of costs and profit. The Contractor shall educate and encourage all Generators to pay their full payment for Services received and the Contractor shall improve its revenue collection coverage, such that the need for cross-subsidy will decrease each year and be eliminated by the last year of the Agreement. If it is determined during negotiation that Generators collectively are not able to cover the Contractor’s operating costs plus a [...] percent profit, the Department will pay to the Contractor a subsidy as shown in Schedule 7.</li> <li>› On an annual basis, payments are to be adjusted for consumer price inflation/deflation, foreign exchange fluctuation, changes in service demands, and fuel cost adjustments in accordance with Schedule 4.</li> </ul>
	<p><b>REGULATORY FRAMEWORK</b></p> <ul style="list-style-type: none"> <li>› The Department shall provide and designate a safe and accessible disposal site(s) as to create travel distances or no greater than [...] kilometers from within the service zone to the entrance of the site. The disposal site shall be approved and permitted under the prevailing regulatory framework.</li> <li>› The Contractor shall only be allowed to discharge solid wastes to officially designated disposal facilities.</li> <li>› The Contractor shall provide to the Department proof of holding any essential permits.</li> </ul>
	<p><b>IDENTIFICATION AND UNIFORMS</b></p> <ul style="list-style-type: none"> <li>› The Contractor shall provide all Contractor’s staff with identification cards, with their name, photo, and identification number and require them to carry the said identification cards at all times for monitoring purposes.</li> <li>› The Contractor shall provide readily recognizable, brightly colored, shirts (or vests/waistcoats) and pants/trousers of a single design and</li> </ul>

	<p>color to all its workers, to be worn at all times when performing Services under this Agreement, so that they can be readily observed and their performance can be readily monitored.</p> <ul style="list-style-type: none"> <li>› The Contractor shall provide protective shoes and gloves to all workers, for use at all times during performance of services under this Agreement. Sweepers and drain cleaners shall be provided with equipment which facilitates their work and limits their direct contact with the waste materials.</li> <li>› The Contractor shall paint all vehicles and other equipment in the same color as the uniforms provided to the workers, and shall provide each vehicle with a readily visible identification number painted on the sides, front and back of the vehicle.</li> </ul>
	<p><b>PERFORMANCE MONITORING</b></p> <ul style="list-style-type: none"> <li>› The Contractor shall allow the Department to have access at all times to inspect the work being conducted under this Agreement, to inspect all records and documents maintained by Contractor regarding work performed under this Agreement.</li> <li>› The Department has responsibility for monitoring and controlling the Services conducted under this Agreement.</li> <li>› The Contractor shall establish and operate a complaint and public liaison office within its assigned zone of service.</li> <li>› A complete log of all communications is to be maintained, including a record of actions to follow-up on any complaints or comments.</li> <li>› The Contractor shall provide the Department with the planned and scheduled route for each vehicle and equipment unit, including each sweeper, so as to facilitate monitoring of performance of all work to be conducted under this Agreement.</li> </ul>
	<p><b>VEHICLES &amp; EQUIPMENT</b></p> <ul style="list-style-type: none"> <li>› The Contractor’s vehicles and equipment used for performing Services shall be adequate to perform the Services. As the requirements of the Zone increase, or as vehicles and equipment become fully depreciated or reach the end of their useful life, Contractor shall immediately purchase, rent, or lease vehicles and equipment to satisfy such requirements or replace such retired vehicles and equipment.</li> <li>› The Contractor's vehicles and equipment shall be registered and shall operate in compliance with all applicable central, provincial, and local laws and regulations.</li> <li>› Contractor shall keep all vehicles and equipment used for performing Services in good repair, appearance and sanitary condition.</li> <li>› All vehicles and equipment shall be operated by qualified and licensed operators and so as not to harm human health or the environment.</li> <li>› All vehicles shall maintain a record book of time and movement, including: departure time from the parking area at the start of work, arrival time at and departure time from the officially designated discharge location, and arrival time at the parking area at the end of work.</li> </ul>

	<ul style="list-style-type: none"> <li>&gt; The Contractor shall bring all solid waste vehicles to the officially designated weigh bridge or checkpoint for measurement of the load's weight or volume, respectively.</li> </ul>
STANDARD SECTIONS	DEFINITIONS PERFORMANCE SECURITY LIABILITY & IDEMNITY ARBITRATION MISCELLENEOUS TERMINATION
OPTIONAL SECTIONS	PROVISIONS REGARDING WORKERS TRANSFERRED OR SECONDED FROM DEPARTMENT TO CONTRACTOR PROVISIONS REGARDING VEHICLES PURCHASED OR LEASED FROM DEPARTMENT
APPENDICES / SCHEDULES	SCHEDULE 1 - COLLECTION ZONES SCHEDULE 2 - LISTS OF STREETS FOR STREETSWEEPING SCHEDULE 3 - PAYMENT MODEL SCHEDULE 4 - INDEXATION OF PAYMENTS SCHEDULE 5 - HOLIDAYS SCHEDULE 6 - PERFORMANCE SECURITY SCHEDULE 7 - SUBSIDIES FROM DEPARTMENT TO CONTACTOR SCHEDULE 8 - SANCTIONS

## Appendix O ToR for Independent Technical and Financial Verification

### Appendix O.1 ToR for Independent Technical Verification

#### TERMS OF REFERENCE FOR INDEPENDENT TECHNICAL VERIFICATION AGENT (ITVA) UNDER OBA IN SWM IN NEPAL

##### 1. Introduction

The Government of Nepal (GoN) has received funding from the Global Partnership for Output Based Aid (GPOBA), a trust fund administered by the World Bank, towards implementation of the project 'Output Based Aid in Solid Waste Management in Nepal', and intends to apply part of the proceeds for consultancy services.

The project aims to improve access to high quality and financially sustainable Solid Waste Management (SWM) services in selected secondary cities in Nepal through the provision of a performance based service delivery subsidy (the OBA Subsidy) to support gradual improvements in cost recovery in parallel with service quality improvements over a four-year period.

The disbursement of the OBA Subsidy will be subject to two separate independent verifications:

- › An Independent Technical Verification Agent (ITVA) will confirm acceptable municipal delivery of SWM services, based on a review of Technical Scorecards and sample on-site verification of the service provided; and
- › An Independent Financial Verification Agent (IFVA) will confirm the level of beneficiary revenues collected (the basis for calculation of the OBA Subsidy), based on a validation of the SWM tariffs/charges deposited in the municipality's own account for SWM services.

Acceptable Technical Verification will trigger Financial Verification. Acceptable Financial Verification will trigger the payment of the OBA Subsidy. In case of failed Technical Verification, municipalities will be permitted to seek re-verification on up to three occasions.

The present Terms of Reference concerns the Independent Technical Verification Agent (ITVA). A reputable company with technical and auditing expertise will be contracted as ITVA to verify acceptable municipal delivery of SWM services as a prerequisite for financial verification, disbursement of part of the technical assistance, and disbursement of the OBA Subsidy.

##### 2. Objective

The objective of this consultancy service is to provide technical auditing and verification services of the Solid Waste Management service provision by participating municipalities through the OBA in SWM in Nepal project.

The ITVA will assist the Solid Waste Management Technical Support Centre (SWMTSC) under the Ministry of Urban Development in verifying that agreed outputs have been produced and issue an output verification report to the SWMTSC Manager for each of the Municipalities.

The day-to-day management of the ITVA will remain with the SWMTSC Manager, although the contract with the ITVA will be signed, paid and administered by the Town Development Fund (TDF).

### **3. Scope of Service**

The Independent Technical Verification Agent (ITVA) will confirm acceptable municipal delivery of SWM services, based on a review of Technical Scorecards and sample on-site verification of the service provided for each of the Municipalities.

The tasks of the ITVA will include (but not necessarily be limited to) the following:

- › Develop methodology, including sampling method, source of information, and instruments for data collection at office and field levels.
- › Confirm with the SWMTSC the indicators and standards outlined in the Technical Scorecard.
- › Confirm/collect baseline data on all indicators in the Technical Scorecard for each of the covered municipalities.
- › Verification of successful implementation and monitoring of the OBA intervention based on:
  - › SWM strategy and SIP action plan indicators (Section 1 of the Technical Scorecard)
  - › Performance monitoring system indicators (Section 2 of the Technical Scorecard)
  - › Service provision indicators (Section 3 of the Technical Scorecard)
  - › Financial performance indicators (Section 4 of the Technical Scorecard)
- › The issuance of the output verification reports to the SWMTSC Manager immediately following the verification.

The ITVA will be required for each of the Municipalities to complete:

- › Desk-based verification (home office) of all monthly Technical Scorecards (as annexed to the quarterly and annual reports by the SWM Unit to the SWM Committee and forwarded to the TDF after approval by the SWM Committee).
- › Inspection and verification (on-site in municipality) of the primary data collected by the SWM Unit as basis for the Technical Score Cards (a random sample of 25% of the lines in the Technical Scorecards are checked against the primary records, files and data sources used by the municipality in preparing them).
- › Visual on-site inspection of all waste collection, transport and disposal procedures supported by interviews with SWM staff and management as well as TLO managements in representative (as agreed in inception report) service areas.
- › Pictures of areas/houses verified

The ITVA will be requested to perform the verification in batches of Technical Scorecards covering a [12] month calendar period.

The basis for the work of the ITVA shall be:

- › The 'OBA in SWM in Nepal' Operations Manual

- › The SWM-SIP for each of the Municipalities
- › The Technical Scorecard baseline data established for each of the Municipalities
- › The monthly Technical Scorecards as annexed to the quarterly and annual reports by the SWM Unit to the SWM Committee and forwarded to the TDF after approval by the SWM Committee
- › Any contract entered between the Municipalities and TLOs / Private sector / NGOs regarding SWM
- › Physical on-site inspection and interviews

The Municipalities (and their subcontractors in case of services subcontracted to TLOs / Private sector / NGOs) shall provide detailed information to TDF about the service provided in the quarterly and annual reports, which information shall be cross-checked with information from the verification exercise before disbursement of the output based subsidy (also subject to financial verification and TA funds disbursement).

The SWMTSC will send to SWMTSC with a copy to TDF all ITVA reports, other project monitoring reports and reports on technical assistance to municipalities. TDF will with the assistance of SWMTSC aggregate these with IFVA and any other project reports for submission to World Bank/GPOBA.

#### **4. Experts Required**

The ITVA should have a broad knowledge of SWM services and documented experience in technical audits and independent reviews of municipal service delivery. Familiarity with utility billing procedures as well as IT systems and database manipulation expertise will be an added advantage.

The ITVA should be able to propose at least [2] teams of technical experts for physical inspection that:

- › Have broad knowledge of solid waste management services.
- › Have at least [3] years of experience in technical audits and independent reviews of municipal service delivery.
- › Are familiar with the relevant SWM standards and legislation in Nepal.
- › Are not currently - and have not within the last 3 years been - employed by any of the Municipalities covered by the ITVA services.

The ability of the ITVA's key team members to mobilize quickly upon notification of a request for verification is essential.

#### **5. Terms of Employment**

The ITVA shall be offered a Contract for a period of [two (2) years, renewable for up to two (2) periods of one (1) year] upon satisfactory performance. The terms of employment shall be “on call” basis. The assignment will necessitate the individual consultants of the ITVA to travel to the participating Municipalities.

The ITVA should expect to begin work in [month, year]. The work is expected to be complete by [month, year]. It is estimated that all work would could be completed with a approximately [6] man-weeks effort per municipality per year.

Remuneration shall consist of:

- › a fixed fee per annual verification per municipality;
- › a fixed fee per re-verification (if requested to perform this by the SWMTSC);
- › a working advance per trip to cover the cost of transport to and from Kathmandu, local transport in the field, accommodation, meals and contingency.

The ITVA shall be liable for taxation under the laws and regulations of Nepal.

## **6. Output**

The ITVA shall submit the following outputs:

- 1 An inception report containing the verification methodology and instruments, within [2] weeks of starting the assignment
- 2 A baseline data report within [6] weeks of starting the assignment
- 3 A quarterly audit report (draft and final versions) for each of the Municipalities in the format provided in Annex below, containing information on the annual audit.
- 4 An updated audit report in cases where a re-audit is requested by the SWMTSC.
- 5 Acceptable accountability documents for the working advance provided for a particular trip. TDF will provide guidelines on acceptable accountability documents to the ITVA.
- 6 Photographic evidence of the verification activities conducted in representative service areas (Pictures of areas/houses verified, meetings held e.g. with SWM staff and management or TLOs).

## **7. Reporting**

The ITVA shall carry out the assignment under the supervision of the SWMTSC Manager [name].

The ITVA shall submit the audit reports for each of the Municipalities to the SWMTSC Manager, with copies to the TDF. The reports should be delivered not more than 5 working days upon returning from the field trip.

## Annex: Model Technical Audit Report

Municipality:	
Audit period covered:	
Audit team:	
Recommendations:	(as to proceed with Financial Verification)

### Overview of audit results:

KPI section	Degree of compliance in audit period	Comment by auditor
1. SWM strategy and action plan KPIs	[ ] out of [ ]	
2. Performance monitoring KPIs	[ ] out of [ ]	
3. Service provision KPIs	[ ] out of [ ]	
4. Financial KPIs	[ ] out of [ ]	
Total compliance	[ ] out of 100	

### Attachments:

1. SWM strategy and action plan KPIs (in spreadsheet)
2. Performance monitoring KPIs (in spreadsheet)
3. Service provision KPIs (in spreadsheet)
4. Financial KPIs (in spreadsheet)
5. List of persons interviewed during physical inspection
6. List of documents reviewed

Date and place:

For ITVA

Name: [ ]

Signature: \_\_\_\_\_

## Appendix O.2 ToR for Independent Financial Verification

### TERMS OF REFERENCE FOR INDEPENDENT FINANCIAL VERIFICATION AGENT (IFVA) UNDER OBA IN SWM IN NEPAL

#### **1. Introduction**

The Government of Nepal (GoN) has received funding from the Global Partnership for Output Based Aid (GPOBA), a trust fund administered by the World Bank, towards implementation of the project 'Output Based Aid in Solid Waste Management in Nepal', and intends to apply part of the proceeds for consultancy services.

The project aims to improve access to high quality and financially sustainable Solid Waste Management (SWM) services in selected secondary cities in Nepal through the provision of a performance based service delivery subsidy (the OBA Subsidy) to support gradual improvements in cost recovery in parallel with service quality improvements over a four-year period.

The disbursement of the OBA Subsidy will be subject to two separate independent verifications:

- › An Independent Technical Verification Agent (ITVA) will confirm acceptable municipal delivery of SWM services, based on a review of Technical Scorecards and sample on-site verification of the service provided; and
- › An Independent Financial Verification Agent (IFVA) will confirm the level of beneficiary revenues collected (the basis for calculation of the OBA Subsidy), based on a validation of the SWM tariffs/charges deposited in the municipality's own account for SWM services.

Acceptable Technical Verification will trigger Financial Verification. Acceptable Financial Verification will trigger the payment of the OBA Subsidy. In case of failed Technical Verification, municipalities will be permitted to seek re-verification on up to three occasions.

The present Terms of Reference concerns the Independent Financial Verification Agent (IFVA). A reputable auditing company will be contracted as IFVA to verify the collected beneficiary revenues as basis for calculation of the OBA Subsidy and assess the quality of the municipality's financial management system for SWM expenditures and revenues.

#### **2. Objective**

The objective of this consultancy service is to provide financial auditing and verification services in relation to the Solid Waste Management service provision by participating municipalities through the OBA in SWM in Nepal project.

The IFVA will assist the Town Development Fund (TDF) in verifying that agreed outputs have been produced and issue an output verification report to the TDF Manager for each of the Municipalities.

The day-to-day management of the IFVA will be with the Town Development Fund (TDF) who will also sign, pay and administered the contract with the IFVA.

### 3. Scope of Service

The Independent Financial Verification Agent (IFVA) will confirm the level of beneficiary revenues collected (the basis for calculation of the OBA Subsidy), based on a validation of the SWM tariffs/charges deposited in the municipality's own account for SWM services.

The tasks of the IFVA will include (but not necessarily be limited to) the following:

*Jointly for all municipalities upon inception:*

- › Develop audit methodology (including sampling method, source of information, and instruments for primary data collection at municipal offices) and detailed reporting format.
- › Confirm with the TDF that the audit methodology and reporting format matches the project objectives as well as the reporting needs of the TDF.

*Individually for each municipality at the end of each quarter:*

- › A validation of the SWM tariffs/charges (i) planned, (ii) published, (iii) billed, and (iv) actually deposited in the municipality's own account for SWM tariffs/charges by category of customer based on a desk review of all monthly account statements and an audit (on-site in municipality) of the account entries against primary data (a random sample of 10% of the account entries are compared against the primary data and records underlying them).
- › An independent calculation of the level of Verified Beneficiary Revenues collected and forming the basis for calculation of the OBA Subsidy (the sum of all SWM tariffs/charges actually deposited in the municipality's own account for SWM tariffs/charges in the audit period)
- › An independent calculation of the Net OBA Subsidy based on (i) the Verified Beneficiary Revenue collected; (ii) the Annual Subsidy Multiple (ASM) specified in the Tripartite Project Implementation Agreements for each year within the subsidy period; and (iii) the applicable Maximum Subsidy specified in the Tripartite Project Implementation in any given year regardless of the amount of verified beneficiary revenue collected.

The amount of subsidy payable for a given period will be calculated as

$$\text{Subsidy Payable}_{\text{period } i} = \text{ASM}_{\text{period } i} * \text{Verified Beneficiary Revenue}_{\text{period } i}$$

with the limitation that  $\text{Subsidy Payable}_{\text{period } i}$  can never exceed  $\text{Maximum Subsidy}_{\text{period } i}$ .

- › An updated overview table of annual Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable in the format provided below (with year to date information being provided for any year in progress):

ITEM	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4
Passing technical scorecard (yes/no)					
Cost recovery target (%)					
Government contribution (%)					
Annual Subsidy Multiplier (ASM)					
Maximum Subsidy					
<b>TOTAL Cost of Services</b>					
<b>Paid for by...</b>					
Government commitment					
Verified Beneficiary Revenue					
Net OBA Subsidy					
Surplus/deficit					

- › An independent calculation of the sum of any penalties determined in accordance with the incentive structure for performance management contained under the contract with the private operator (only applicable for services subcontracted to the private sector).
- › An assessment of the quality of the municipality's financial management system for SWM expenditures and revenues.

The IFVA will be requested to perform the verification in batches of account statements covering periods of one fiscal quarter (3 month).

The basis for the work of the IFVA shall be:

- › The 'OBA in SWM in Nepal' Operations Manual
- › Tripartite Project Implementation Agreements for each of the Municipalities
- › The reports of the Independent Technical Verification Agent (ITVA) for each of the Municipalities
- › The quarterly and annual reports by the SWM Unit to the SWM Committee and forwarded to the TDF after approval by the SWM Committee
- › Any contract entered between the Municipalities and TLOs / Private sector / NGOs regarding SWM
- › On-site inspection of accounts and supplementary interviews

The Municipalities shall provide detailed monthly information to the IFVA about the planned, published, billed, and actually collected SWM tariffs/charges, as well as any other information that the IFVA may need for their work.

The TDF will aggregate all IFVA reports, other project monitoring reports (including from the ITVA) and reports on technical assistance to municipalities, and any other project reports for their submission to World Bank/GPOBA.

#### 4. Experts Required

The IFVA should have broad experience in auditing and financial management for municipal services as well as knowledge of IT systems and database manipulation and familiarity with utility billing procedures.

The IFVA should be able to propose at least [2] teams of Financial experts for on-site audits that:

- › Have at least [5] years of experience in Financial audits and independent reviews of municipal service delivery.
- › Are familiar with the standards and procedures of the TDF and international donors.
- › Are not currently - and have not within the last 3 years been - employed by any of the Municipalities covered by the IFVA services.

The ability of the IFVA's key team members to mobilize quickly upon notification of a request for verification is essential.

#### 5. Terms of Employment

The IFVA shall be offered a Contract for a period of [two (2) years, renewable for up to two (2) periods of one (1) year] upon satisfactory performance. The terms of employment shall be “on call” basis. The assignment will necessitate the individual consultants of the IFVA to travel to the participating Municipalities.

The IFVA should expect to begin work in [month, year]. The work is expected to be complete by [month, year]. It is estimated that all work would could be completed with a approximately [xx] man-weeks effort per municipality per year.

Remuneration shall consist of:

- › a fixed fee per annual audit per municipality;
- › a fixed fee per re-audit (if requested to perform this by the TDF);
- › a working advance per trip to cover the cost of transport to and from Kathmandu, local transport in the field, accommodation, meals and contingency.

The IFVA shall be liable for taxation under the laws and regulations of Nepal.

#### 6. Output

The IFVA shall submit the following outputs:

- 1 An audit report (draft and final versions) for each of the Municipalities in the format provided in Annex below, containing information on the annual audit.
- 2 An updated audit report in cases where a re-audit is requested by the TDF.
- 3 Acceptable accountability documents for the working advance provided for that particular trip. TDF will provide guidelines on acceptable accountability documents to the IFVA.

- 4 Signed copies of introductory letters to municipal staff and management interviewed during audits.

## **7. Reporting**

The IFVA shall carry out the assignment under the supervision of the TDF Manager [name].

The IFVA shall submit the audit reports for each of the Municipalities to the TDF Manager. The reports should be delivered not more than 5 working days upon returning from the field trip.

## Annex: Model Audit Report

Municipality:	
Audit period covered:	
Audit team:	
Recommendations:	(as to release co-funding)

### Overview of audit results:

Audit element	Results and comment by auditor
1. Validation of the SWM tariffs/charges	
2. Independent calculation of beneficiary revenues collected	
3. Independent calculation of the sum of any penalties	
4. Independent calculation of the OBA Subsidy	
5. Overview table of Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable	
6. Assessment of the quality of the municipality's financial management system	

### Attachments:

1. Validation of the SWM tariffs/charges
2. Independent calculation of beneficiary revenues collected
3. Independent calculation of the sum of any penalties
4. Independent calculation of the OBA Subsidy
5. Overview table of Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable
6. Assessment of the quality of the municipality's financial management system
7. List of persons interviewed during site visit in municipality
8. List of documents reviewed

Date and place:

For IFVA

Name: [ ]

Signature: \_\_\_\_\_

## Appendix P Formats for Output Verification Reports and Project M&E Reports

### Appendix P.1 Sample Technical Output Verification Report (TOVR)

Municipality:	
Audit period covered:	
Audit team:	
Recommendations:	(as to proceed with Financial Verification)

#### Overview of audit results:

KPI section	Degree of compliance in audit period	Comment by auditor
1. SWM strategy and action plan KPIs	[ ] out of [ ]	
2. Performance monitoring KPIs	[ ] out of [ ]	
3. Service provision KPIs	[ ] out of [ ]	
4. Financial KPIs	[ ] out of [ ]	
Total compliance	[ ] out of 100	

#### Attachments:

1. SWM strategy and action plan KPIs
2. Performance monitoring KPIs
3. Service provision KPIs
4. Financial KPIs
5. List of persons interviewed during physical inspection
6. List of documents reviewed

Date and place:

For ITVA

Name: [ ]

Signature: \_\_\_\_\_

## Appendix P.2 Sample Financial Output Verification Report (FOVR)

Municipality:	
Audit period covered:	
Audit team:	
Recommendations:	(as to release co-funding)

### Overview of audit results:

Audit element	Results and comment by auditor
1. Validation of the SWM tariffs/charges	
2. Independent calculation of beneficiary revenues collected	
3. Independent calculation of the sum of any penalties	
4. Independent calculation of the OBA Subsidy	
5. Overview table of Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable	
6. Assessment of the quality of the municipality's financial management system	

### Attachments:

1. Validation of the SWM tariffs/charges
2. Independent calculation of beneficiary revenues collected
3. Independent calculation of the sum of any penalties
4. Independent calculation of the OBA Subsidy
5. Overview table of Cost Recovery Targets, Annual Subsidy Multiples, and Subsidies Payable
6. Assessment of the quality of the municipality's financial management system
7. List of persons interviewed during site visit in municipality
8. List of documents reviewed

Date and place:

For IFVA

Name: [ ]

Signature: \_\_\_\_\_

## Appendix P.3 Sample Report - Participating Municipalities to SWMTSC (Quarterly & Annual)

Municipality	
Period covered	
Status of SWM-SIP implementation	
Status of OBA project implementation	
SWM fee charged (by category) and total beneficiary revenues collected	
Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA	
Status on invoicing of OBA subsidy	
Total OBA subsidy invoiced and disbursed to date	
Issues raised by the ITVA and IFVA in the Verification Reports	
Expected activities for the next two quarters specifying any planned procurement or contracting	
Details on any problems encountered	

Attachments to quarterly report:

1. Filled-out Technical Scorecards for the Quarter (to be verified)
2. Revised Technical Scorecards for any previous Quarter for which re-verification is requested

Additional attachments to annual report:

3. Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)
4. Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

## Appendix P.4: Sample Report - TA consultants to SWMTSC (Quarterly)

Name of TA assignment	
Company name	
Name of lead consultant	
Municipalities covered	
Period covered	
General progress on fulfilment of the objective of the TA services	
Specific activities conducted in the quarter	
Planned activities for the next two quarters	
List of any materials or reports produced	
List of participants in meetings and workshops	
Details on any problems encountered	
Any other items required by the specific TOR for the TA services	

Date and place:

For [company name]

*Name:* [   ]

Signature: \_\_\_\_\_

## Appendix P.5: Sample Report - SWMTSC to TDF (Quarterly)

Period covered	
Verbal description of overall project progress	
<p>Project indicators for improved quality of services</p> <ul style="list-style-type: none"> <li>› Number of households within the core city area receiving daily waste collection services on a door-to-door curbside basis</li> <li>› Number of households outside the core city area receiving at least weekly waste collection services on a 'bring to truck' or communal container basis</li> <li>› Percentage of wards/zones within a municipality's area that are receiving regular SWM services, as per stated service levels in the municipality's solid waste management service improvement plan</li> <li>› Percentage of wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection</li> <li>› Percentage of sampled households who report that waste collection and street cleaning services provided by the municipality have met or exceeded their expectations</li> </ul>	
<p>Project indicators for improved financial sustainability</p> <ul style="list-style-type: none"> <li>› Increase in SWM fee charged to all waste generators</li> <li>› Annual revenues from collected SWM fees</li> <li>› Percentage O&amp;M cost recovery from SWM fees</li> </ul>	
Results of technical verification in Participating Municipalities	
Management of the TPIAs between SWMTC, TDF and Participating Municipalities	
Procurement and contracting of TA providers to assist municipalities with implementation	
Communication and outreach activities to participating and prospective municipalities	

Signed letters of commitment with new prospective municipalities	
Challenges of implementation encountered and any identified mitigation measures	

## Appendix P.6: Sample Report - TDF to Donor Partners (Annual)

Period covered	
Verbal description of overall project progress	
<p>Project indicators for improved quality of services</p> <ul style="list-style-type: none"> <li>› Number of households within the core city area receiving daily waste collection services on a door-to-door curbside basis</li> <li>› Number of households outside the core city area receiving at least weekly waste collection services on a ‘bring to truck’ or communal container basis</li> <li>› Percentage of wards/zones within a municipality’s area that are receiving regular SWM services, as per stated service levels in the municipality’s solid waste management service improvement plan</li> <li>› Percentage of wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection</li> <li>› Percentage of sampled households who report that waste collection and street cleaning services provided by the municipality have met or exceeded their expectations</li> </ul>	
<p>Project indicators for improved financial sustainability</p> <ul style="list-style-type: none"> <li>› Increase in SWM fee charged to all waste generators</li> <li>› Annual revenues from collected SWM fees</li> <li>› Percentage O&amp;M cost recovery from SWM fees</li> </ul>	
Overview of the results of technical and financial verification	
Funds and their accountabilities	
Procurements	
Replenishment and disbursements to and from the Designated Account	
Disbursement of subsidy to Participating Municipalities	

Execution of OBA Implementation Agreements (TPIAs) with Participating Municipalities	
Any discussions held with potential new donor partners	

## Appendix Q Sample Expression of Interest and Letter of Commitment

[Letterhead of Municipality]

**Att.: OBA Project Coordinator [name]**  
**Solid Waste Management Technical Support Centre**  
**Shreemahal, Pulchowk**  
**Lalitpur, Nepal**

[Date]

Dear Sir/Madam

**Subject: Expression of Interest to Participate in the Output-Based Aid in Solid Waste Management in Nepal Project**

The Solid Waste Management Technical Support Centre (SWMTSC), Ministry of Local Development, has informed us of the Output-Based Aid in Solid Waste Management in Nepal project (the OBA Project), which will improve solid waste management in selected municipalities using output-based aid approaches.

This letter serves to express our interest in participating in the OBA Project. We understand that the project, will partly finance a ‘transitional subsidy scheme’ to support a gradual increase in household charges for improved solid waste management services over a four year period

[Name of municipality], currently charges a solid waste fee/tax of Rs. [current fee] per month/household, which is far below the cost recovery level. While our intention is not to transfer the full costs of solid waste management to households, we are committed to increasing household charges (and hence household contribution to the cost of properly managing solid waste) to ensure the financial viability of providing the services and enable their expansion over time to keep pace with the growing population. However, we would like to phase the increase in charges gradually; both to ease the burden on poor households and to demonstrate improvements in service performance before a significant portion of the costs of those improvements are passed onto the households.

The OBA Project is therefore timely. Not only could it help us to expand and improve waste management in the municipality, it could also put solid waste operations in a reasonable financial position at the end of the subsidy scheme, thereby strengthening the municipality’s ability to commit resources thereafter to cover any shortfalls that may be needed going forward without compromising other municipal services.

We look forward, and are committed to working with SWMTSC to firm up the details of our possible participation in the OBA Project. We understand that participating in project preparation activities is not a guarantee that we would receive financial support.

Yours faithfully,

[Signature]

[Name of CEO]

Chief Executive Officer

[Stamp of municipality]

[Letterhead of Municipality]

**Att.: OBA Project Coordinator [name]**  
**Solid Waste Management Technical Support Centre**  
**Shreemahal, Pulchowk**  
**Lalitpur, Nepal**

[Date]

Dear Sir/Madam

**Subject: Commitment to Participate in the Output-Based Aid in Solid Waste Management in Nepal Project**

[Name of municipality] has been in discussions with the Solid Waste Management Technical Support Centre (SWMTSC), Ministry of Local Development, on the possible participation of the municipality in the Output-Based Aid in Solid Waste Management in Nepal project (the OBA Project), which will improve solid waste management in selected municipalities using output-based aid approaches.

We have submitted documentation to prove that our municipality qualifies under the eligibility criteria for participating municipalities under the OBA Project, hereunder in particular that:

- › The municipality has a basic functioning SWM system in place (collection and disposal) and an existing system for collecting solid waste charges from beneficiaries;
- › The municipality has access to a landfill that is operational, and is considered environmentally acceptable within GoN's environmental guidelines and standards;
- › The municipality commits to the project objective of improving quality and financial sustainability of SWM services; and
- › The municipality agrees to prepare a SWM strategy and action plan and to establish a SWM Committee and a dedicated SWM Unit.

This letter serves to express our commitment the project objective of improving quality and financial sustainability of SWM services. We understand that the project will partly finance a 'transitional subsidy scheme' to support a gradual increase in household charges for improved solid waste management services over a four year period.

We look forward, and are committed to working with SWMTSC to firm up the details of our participation in the OBA Project. We understand that participating in project preparation activities is not a guarantee that we will receive financial support.

Yours faithfully,

[Signature]

[Name of CEO]

Chief Executive Officer

[Stamp of municipality]

## Appendix R Stakeholder Consultation Report

*Separate document*

## Appendix S Template Willingness to Pay (WTP) Survey

### **OBA Waste Nepal - WTP Survey**

(Questionnaire based on work by Sandra Cointreau-Levine)

Date of interview:

Name of interviewer:

Municipality (Tansen or Dhankuta):

Interviewee (Household or Business):

Location (urban center, urban, peri-urban or rural):

Distance from black top road (0-10m, 10-50m, 50-100m, 100-200m, more than 200m):

"I would like to ask you some questions that would assist the local government in improving the solid waste collection service to your neighborhood. These questions take about 10 minutes. We are interviewing a small sample of households and businesses in the municipality and your input is very valuable to this survey."

#### **A. Identification:**

A.1 Ward number:

A.2 TLO:

A.3 Position of Respondent (Head of household or business / Spouse of head of household or business / other):

A.4 How many people (children and adults) live in your household (or work in your business) on a regular basis?

A.5 (If a business) What is the principle commercial activity of the business?

A.6 Does the household (or business) have a plot of land?

A.7 Does the household (or business) have animals?

#### **B. Major Concerns:**

B.1 What problems do you consider the most serious problems for your household (or business)?

B.2 In your opinion, how serious is the problem of 'Inadequate solid waste collection service'?

Very serious a

Somewhat serious b

Not serious c

Don't know d

B.3 In your opinion, how serious is the problem of 'Presence of litter and illegal piles of solid waste'?

Very serious a

Somewhat serious b

Not serious c

Don't know d

B.4 In your opinion, how serious is the problem of 'Nuisance from solid waste disposal sites'?

Very serious a

Somewhat serious b

Not serious c

Don't know d

**C. Existing Situation Regarding Solid Waste Collection:**

- C.1 Does your household (or business) have a durable metal or plastic container for storing solid waste?  
 Yes, we have metal or plastic container a  
 We have basket or carton container b  
 No, we do not have a container c  
 Don't know d
- C.2 Where is your waste taken from the household?  
 Waste container is placed beside the road for emptying into a collection vehicle a  
 Waste container is emptied into a collection vehicle by household b  
 The container is emptied into a communal container in the neighborhood. c  
 The container is emptied onto an open pile of waste in the neighborhood. d  
 Other (explain) ..... e  
 Don't know f
- C.3 Approximately how far or how many minutes walking time one-way is it to empty your container?  
 ..... meters one-way  
 ..... minutes walking one-way  
 Don't know
- C.4 How often does the collection vehicle come by to pick-up the waste?  
 Daily a  
 Three times a week b  
 Twice a week c  
 Once a week d  
 Less than once a week e  
 Less than once in 2 weeks f  
 Less than once a month g  
 No waste collection service in the area h  
 Don't know i
- C.5 What is your opinion of the service that you are receiving for collection of solid waste from your household (or business)?  
 Very satisfied a  
 Reasonably satisfied b  
 Not satisfied at all c  
 Don't know d
- C.6 If you are not satisfied with service, would you state your primary reason?  
 The service is not reliable a  
 Frequency of service – the interval between collections is too long. b  
 The location of the pick-up point is unsatisfactory c  
 The collection workers are rude or impolite. d  
 Lack of clean appearance of the neighborhood e  
 Other problem f Please explain.....
- C.7 Do you know where the collected waste is taken for final disposal when it leaves your neighborhood?  
 Yes a  
 Don't know b
- C.8 Are you concerned about whether the final disposal is environmentally safe and acceptable?  
 Yes a  
 No b  
 Don't know c

C.9 Does the household (or business) pay a sanitation fee to the municipality?

Yes a

No b

Don't know c

C.10 What is the annual sanitation fee that you presently pay?

700-1000 NRP a

500-700 NRP b

300-500 NRP c

100-300 NRP d

0-100 NRP e

Don't know f

#### **D. Description of Proposed Service Options**

“Plans are being developed to upgrade the solid waste system in your neighborhood:

Distribution of plastic collection bins to households and shops close to streets where the collection truck drives

Offer home composting bins and training to households with own land

Litter bins in market area

Improved waste collection

Households and business in your neighborhood will be expected to pay a fee for this improved service.”

#### **E. Demand Assessment:**

Three service levels are being considered:

##### Daily Collection - door to door:

A vehicle would come to the neighborhood on a scheduled basis and provide a door-to-door service. At each building, containers of waste, which have been left at the curbside, would be emptied into the vehicle. The emptied containers would be placed neatly at the curb for residents to bring back into their household (or establishment). Residents would be required to adhere to the schedule and bring their waste to the curb in proper containers before the vehicle arrives

##### 2 Collections per week - bring to truck:

A vehicle would come to the neighborhood on a scheduled basis and park for a few minutes at each block or road junction to collect solid waste. When the vehicle parks it would sound its horn to summon residents to bring their containers out to be emptied. All waste in the neighborhood would be kept inside until the vehicle comes.

##### Communal container:

A large communal container - probably of 5 to 8 cubic meters capacity – (interviewer should demonstrate the size) would be placed in your neighborhood at a central location. Each household and establishment would be expected to carry its container of refuse to empty it into the container. The container would have an attendant to sweep the area and keep it tidy. A vehicle would pick up the container and take it away to be emptied before it is completely full.

E.1 What is the maximum fee per month that your household (or business) would be prepared to pay for Daily Collection - door to door service?

- 160-200 NRP a
- 130-160 NRP b
- 100-130 NRP c
- 70-100 NRP d
- 50-70 NRP e
- 30-50 NRP f
- 10-30 NRP g
- 0-10 NRP h
- Don't know i

E.2 What is the maximum fee per month that your household (or business) would be prepared to pay for 2 Collections per week - bring to truck service?

- 160-200 NRP a
- 130-160 NRP b
- 100-130 NRP c
- 70-100 NRP d
- 50-70 NRP e
- 30-50 NRP f
- 10-30 NRP g
- 0-10 NRP h
- Don't know i

E.3 What is the maximum fee per month that your household (or business) would be prepared to pay for Communal Container service?

- 160-200 NRP a
- 130-160 NRP b
- 100-130 NRP c
- 70-100 NRP d
- 50-70 NRP e
- 30-50 NRP f
- 10-30 NRP g
- 0-10 NRP h
- Don't know i

E.4 What is the maximum additional fee per month that your household (or business) would be prepared to pay if the municipality ensures that there is daily Street sweeping and cleaning of drains in the area where your house/business is located?

E.5 If you have said that you are willing to pay for a collection service, to whom would you prefer to pay the fee?

- Directly to the municipality a
- Through the TLO c
- They are all equally suitable d
- Don't know e

## F. Other Information

F.1 (If a household) How many people in your household contribute to the household income?

F.2 Would you classify your household income as being above, below or around the average household income in the municipality?



## Appendix T Implementation Gantt Charts

## TPIA Annex 2 – Lalitpur Technical Scorecard Baseline and Targets

#	KPI	Verifiable indicator	Target Values by Year				
			Baseline	1	2	3	4
<b><i>SWM strategy and action plan KPIs</i></b>							
1,1	SWM Subject Committee  <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR.</p> <p><b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.</p>	A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers has been established and usually convenes on a monthly basis.	Pass	Pass	Pass	Pass
1,2	Section/unit of municipality tasked with overseeing SWM  <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP.</p> <p><b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.</p>	At the operational level, the Environment & Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects.	Pass	Pass	Pass	Pass
1,3	SWM-SIP review and up-to-date  <i>(binary pass / fail)</i>	<p><b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.</p>	NA	Pass	Pass	Pass	Pass

#	KPI	Verifiable indicator	Target Values by Year				
1.4	Enabling PPP in MSW	<p><b>Year -1</b> 1.) Municipality prepares and approves formal strategy/policy on and practical guideline for involvement of private enterprises, NGOs and TLOs in waste management. 2.) Municipality works with SWMTSC on establishing (improving existing) contracts private operators.</p> <p><b>Year -2</b> 1.)Municipality establishes regulation on the (maximum) size of tariffs collected by private enterprises and NGOs involved in waste collection. 2.) Municipality establishes monitoring system for private operator service delivery in accordance with contract.</p> <p><b>Year -2-4</b> 1.)System for data collection on or self-reporting by private enterprises, NGOs and TLOs involved in MSW established.</p>	Collection services are provided by LSMC in 11 wards and by private service providers in 11 wards				
			There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC	Pass	Pass	Pass	Pass

#### *Performance monitoring KPIs*

2,1	Landfill operations and waste reduction  (binary pass / fail)	<p><b>Year 1:</b> Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives 'no objection.'</p> <p><b>Years 2-4:</b> (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review.</p>	All waste for disposal is transported to the Okharpauwalandfill which is operated jointly by Kathmandu and Lalitpur.				
			There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility	Pass	Pass	Pass	Pass

#	KPI	Verifiable indicator	Target Values by Year				
2,2	Communications systems <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality's SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address complaints). SWMTSC reviews communications system and gives 'no objection.' NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Years 2-4:</b> (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p>	Communication with key stakeholders such as private sector organizations, women group, TLOs, NagarikSamaj (citizen forum) and NGOs is the responsibility of the Environment Section, which organizes quarterly stakeholder meeting. The Environment Section head of LSMC is responsible for reporting to the municipal board.	Pass	Pass	Pass	Pass
2,3	Service delivery monitoring <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard's service provision KPIs. NOTE: This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its service delivery monitoring system with up-to-date data for all indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.</p>	<p>The SWM service delivery monitoring is limited to monitoring of the vehicle log book and the waste collected from the specific route of that vehicle. However, in practice service is mainly evaluated based on cleanliness of streets and complain from nearby people.</p> <p>Vehicle use and fuel consumption is logged, but fuel provision by supervisor is based on normative consumption for specific route, and fuel efficiency is not monitored.</p>	Pass	Pass	Pass	Pass

#	KPI	Verifiable indicator	Target Values by Year				
2,4	Fiduciary monitoring system  (binary pass / fail)	<p><b>Year 1:</b> the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (iv) all financial indicators within the Technical Scorecard's Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives 'no objection.' <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its fiduciary monitoring system with up-to-date information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.</p>	Expenditure for repair and maintenance of vehicles, tools and equipment and fuel consumption is recorded by the Account Section of LSMC based on instructions by the Environment Section. The cost of landfill operation is handled by KMC, with LSMC providing the amount required by the Landfill Operation Unit and recommended by SWMTSC. All financial transactions are recorded at LSMC and audited as per government rule by internal and external auditor every year.	Pass	Pass	Pass	Pass

### *Service provision KPIs*

3,1	Wards served  (% of municipal urban and peri-urban wards )	<p>% of wards within a municipality's area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system.</p> <p>Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.</p>	<p>Collection services are provided in the current 22urban wards (91% on average) with daily door-to-door by two private operators and bring to truck collection by LSMC.</p> <p>No service is provided in 3 new VDC included in Lalitpur as of January 2015.</p> <p>In all 25 wards average service is 81% at the start of 2015</p>	91% (old) 81% (total)	92% (old) 83% (total)	94% (old) 87% (total)	95% (old) 90% (total)
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#	KPI	Verifiable indicator	Target Values by Year				
3,2	Visual cleanliness in public areas, main streets and secondary streets  (% of wards receiving services)	Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.  ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.	LSMC consider street cleaning as the prime function of the municipality to keep the city clean. It is the visible and significant symbol to demonstrate the city as clean city.  Target: Street sweeping in core area and at main streets and public areas in other areas. No formal data is available but it is assessed that 75% of the area is clean.	80%	85%	90%	95%
3,3	Customer Satisfaction  (% of customers perceiving services delivered to SWM-SIP target standards)	% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.  ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.	The municipality performs surveys of customer satisfaction with different services through the TLO representatives.  Baseline and targets based on very satisfied + reasonable satisfied to be established.	70%	75%	80%	85%
3,4	Safe disposal of collected waste  (binary pass / fail)	Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm).  The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received.  Illegal deposits at transfer stations of private operators are cleared (year 1).	There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility	Pass	Pass	Pass	Pass

#	KPI	Verifiable indicator	Target Values by Year				
3.5	Waste segregation and composting at household level	Percentage of households practicing proper and correct waste segregation at household level based on random inspection of 10% of households provided with bins for waste segregation and/or home composting.	A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households  An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste	Pass	Pass	Pass	Pass
3.6	Waste recovery	Targets are established and actual performance is measured (by visual inspection and check records) for recovery of recyclable material and organic fraction in waste stream at transfer stations and landfill (share of recoverable materials actually being separated and recovered/sold/reused).	The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill.  There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling. LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.	Pass	Pass	Pass	Pass

#### ***Financial KPIs***

4,1	SWM fee collection efficiency (LSMC)	Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year.	Total tariff revenues collected in 2013/14 were NRP 20 Lakh.  Expectations for 2015/16 are NRP 84 Lakh.  The collection ratio for baseline is 20% for LSMC.	20%	25%	30%	35%
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#	KPI	Verifiable indicator	Target Values by Year				
4,2	Increase in SWM fees charged  <i>(% increase on previous year)</i>	Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.	<p>LSMC collects 20 Lakh SWM fee (2013/14) from institutions, supermarkets and hospitals but did not collect a sanitation fee from households and small businesses in their service areas prior to the OBA project. This is equal to 2% cost recovery.</p> <p>Municipality will introduce SWM fees for households from 2015.</p> <p>Target is based on 2015/16 expectations of 84 Lakh and gradual increases thereafter.</p>	84 Lakh	112 Lakh	144 Lakh	183 Lakh
4,3	Labor efficiency  <i>(# of staff years per 1,000 paying customer)</i>	# of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average pf periods amounting to no less than 3 months.	<p>Around 55.000 out of 60.000 households in the urban wards covered by LSMC receive SWM services.</p> <p>The total number of municipal employees in SWM is 206, including 4 administrative officers, 5 supervisors, 15 drivers, 40 loaders, 9 mechanics, and 133 street sweepers. That equals 3.74 staff years per 1,000 SWM customers.</p> <p>No figures are available for actual paying customers. This is to be established by the municipality and an annual improvement of 5% is targeted.</p>	-5%	-5%	-5%	-5%

## TPIA Annex 3 – Lalitpur OBA Subsidy Determination and Disbursement

The project will pay subsidies to the municipality based on:

- › The Maximum Subsidy specified below
- › The Annual Subsidy Multiple (ASM) specified below
- › The Verified Beneficiary Revenue collected as described below

### **Determination of the OBA Subsidy**

The amount of subsidy payable for a given period will be calculated as

$$\text{Subsidy Payable}_{\text{periodi}} = \text{ASM}_{\text{periodi}} * \text{VerifiedBeneficiaryRevenue}_{\text{periodi}}$$

with the limitation that  $\text{Subsidy Payable}_{\text{periodi}}$  can never exceed  $\text{MaximumSubsidy}_{\text{periodi}}$ .

### **The Maximum Subsidy and ASM**

The Maximum subsidy and ASM for the municipality has been calculated based on the estimated total costs of the implementing the SWM-SIP (included in Annex 6) over a four year period and the total revenues (from beneficiary revenues, government contribution, and OBA subsidy) as agreed between SWMTSC and the municipality.

The Annual Maximum Subsidy amounts and ASMs are established as:

LALITPUR SUBSIDY DETERMINATION	Yr 0 (baseline)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5 (post subsidy)
Cash expenditures in year under SWM-SIP (Rs Lakh)	886	1.659	1.572	1.208	1.307	1.368
Model Total Cost of Services (Rs Lakh)	994	1.418	1.455	1.482	1.593	1.707
Paid for by...						
Government commitment (Rs Lakh)	861	921	986	1.055	1.129	1.208
Verified Beneficiary Revenue (Rs Lakh)	20	84	112	144	183	230
Net OBA Subsidy (Rs Lakh)		412	358	283	281	
Surplus/deficit	113	-	-	-	-	270
Cost recovery target - Model Total Costs (%)	2%	6%	8%	10%	11%	13%
Cost recovery target – Cash expenditures (%)	2%	5%	7%	12%	14%	17%
Cost recovery target - O&M Costs (%)	2%	9%	10%	12%	15%	17%
<b>Annual Subsidy Multiplier (ASM)</b>		4,9	3,2	2,0	1,5	
<b>Maximum Subsidy (Rs Lakh)</b>		412	358	283	281	
Assumed change in tariff level		10%	10%	10%	10%	10%

It is important to note that the above calculation of the Model Total Cost of Service does not represent actual cash expenditures in the individual year as some component are accounting in nature (e.g. depreciation on existing and new capital asset).

### **The Verified Beneficiary Revenues**

Municipalities will report monthly on Beneficiary Revenues collected. The IFVA will subsequently verify the accuracy of reported figures based on an examination of municipal records and accounts.

The amount of Beneficiary Revenue that the IFVA confirms will form the basis for calculation of the OBA Grant by the IFVA as described above.

### **Disbursement of the OBA Subsidy**

Please refer to Annex 4 Verification and Disbursement Procedures.

## TPIA Annex 4 – Verification and Disbursement Procedures

The disbursement of the OBA Subsidy will be subject to two separate independent verifications:

- › Independent technical verification confirming acceptable municipal delivery of SWM services, based on a review of technical scorecards and sample on-site verification of the service provided; and
- › Independent financial verification confirming the level of beneficiary revenues collected (the basis for calculation of the OBA matching grant), based on a validation of the SWM tariffs/charges deposited in the municipality's own account for SWM services.

Acceptable Technical Verification will trigger Financial Verification.

Acceptable financial verification will trigger the payment of the subsidy directly from the designated account to the municipality's SWM account, less any advances drawn from the Advances Facility.

In case of failed Technical Verification, municipalities will be permitted to seek re-verification on up to three occasions.

If in any year a municipality is not able to earn the maximum subsidy for that year, either due to failure to pass the technical verification or failure to improve its SWM revenue collection performance, the balance of the maximum subsidy for that year may be carried over to the subsequent year. The requirement for such carry over is that the municipality, in consultation with SWMTSC, has undertaken a review of the progress on SWM-SIP activities and revenue collection, and outlined in its annual report to SWMTSC the implementation lessons and what the municipality will do different the subsequent year to improve its technical and revenue collection performance.

The Technical Scorecard is attached to Annex 5 Reporting Formats.

## TPIA Annex 5 – Reporting Formats

The Municipality will report to TDF through SWMTSC as follows:

### **Quarterly Report**

The Municipality shall within 10 days of the beginning of each quarter submit quarterly/trimesterly reports to SWMTSC with the following information:

- Status of SWM-SIP implementation
- SWM fee charged (by category) and total beneficiary revenues collected
- Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA
- Status on invoicing of OBA subsidy
- Total OBA subsidy invoiced and disbursed to date
- Issues raised by the ITVA and IFVA in the Verification Reports
- Expected activities for the next two quarters specifying any planned procurement or contracting
- Details on any problems encountered
- Filled out Technical Scorecards for the Quarter to be verified
- Revised Technical Scorecards for any previous Quarter for which re-verification is requested

### **Annual Report**

The Municipality shall, within 30 days of the beginning each Fiscal Year, submit annual reports to SWMTSC with the following information:

- Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)
- Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

### **Technical Scorecards (attached to the Quarterly Reports)**

Information on the Key performance indicators (KPIs) in the Technical Scorecard will be collected by the municipality for verification by the ITVA. The Technical Scorecard has 4 sections:

- SWM strategy and action plan KPIs (which tracks the implementation of the SWM strategy and action plan for the municipality)
- Performance monitoring KPIs (which tracks the availability of a system to capture and report key operational data)
- Service provision KPIs (which tracks the provision of collection and disposal services against defined targets)
- Financial KPIs (which tracks the developments in collection ratio, tariffs and cost recovery)

Sample formats for the Quarterly/Annual Reports and the Technical Scorecard are attached.

### **Sample Report - Participating Municipalities to SWMTSC (Quarterly & Annual)**

Municipality	
Period covered	
Status of SWM-SIP implementation	
Status of OBA project implementation	
SWM fee charged (by category) and total beneficiary revenues collected	
Status of verification of Technical Scorecards by ITVA and beneficiary revenues by IFVA	
Status on invoicing of OBA subsidy	
Total OBA subsidy invoiced and disbursed to date	

Issues raised by the ITVA and IFVA in the Verification Reports	
Expected activities for the next two quarters specifying any planned procurement or contracting	
Details on any problems encountered	

*Attachments to quarterly report:*

1. Filled-out Technical Scorecards for the Quarter (to be verified)
2. Revised Technical Scorecards for any previous Quarter for which re-verification is requested *Additional attachments to annual report:*
3. Progress under the OBA project during the past year with implemented service improvement, collected beneficiary revenues, completed verification and invoiced subsidy described (on a quarterly basis)
4. Proposed work program for the following year specifying planned service improvements and SWM fees (on a quarterly basis)

**Sample report - Technical Scorecard**

**Municipality:**

**Period:**

#	KPI	Verifiable indicator	Self-assessment by Municipality
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**SWM strategy and action plan KPIs**

1,1	SWM Subject Committee <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) TOR drafted and approved by chief municipal officer; (ii) Committee members and alternates nominated; (iii) First meeting held and minutes of first meeting approved by committee members. NOTE: approved SWM-SIPs should include committee TOR</p> <p><b>Years 2-4:</b> (i) Approved minutes of semi-annual committee meetings evidence committee functionality; (ii) any vacant committee seats filled within 6 months of occurring. Alternates may temporarily serve in vacant posts but must have same authority of a full committee member during that time; (iii) no required committee decision remains outstanding for more than 6 months.</p>	
1,2	Section/unit of municipality tasked with overseeing SWM <i>(binary pass / fail)</i>	<p><b>Year 1:</b> (i) job descriptions in place with no objections from SWMTSC; (ii) staff allocation for SWM officially determined and included within SWM-SIP; (iii) municipality evidences that it has fully or partially deputed staff to SWM functions according to SWM-SIP.</p> <p><b>Years 2-4:</b> (i) municipality evidences that it has made staff allocations according to SWM-SIP and job descriptions; (ii) any vacancies in SWM-SIP planned staffing filled within 6 months. The municipality may fill vacancies temporarily / permanently with consultants working under contract.</p>	
1,3	SWM-SIP review and up-to-date	<b>Years 2-4:</b> (i) SWM-SIP amended to reflect SWM Subject Committee decisions or amended service delivery approaches; (ii) all	

#	KPI	Verifiable indicator	Self-assessment by Municipality
	<i>(binary pass / fail)</i>	supporting analysis also updated (e.g. budgets, revenue projections, etc.); (iii) Any major changes to SWM-SIP pass SWMTSC review.	
1,4	Enabling PPP in MSW	<p><b>Year -1</b> 1.) Municipality prepares and approves formal strategy/policy on and practical guideline for involvement of private enterprises, NGOs and TLOs in waste management.</p> <p>2.) Municipality works with SWMTSC on establishing (improving existing) contracts private operators.</p> <p><b>Year -2</b> 1.)Municipality establishes regulation on the (maximum) size of tariffs collected by private enterprises and NGOs involved in waste collection.</p> <p>2.) Municipality establishes monitoring system for private operator service delivery in accordance with contract.</p> <p><b>Year -2-4</b> 1.)System for data collection on or self-reporting by private enterprises, NGOs and TLOs involved in MSW established.</p>	

**Performance monitoring KPIs**

2,1	Landfill operations and waste reduction  <i>(binary pass / fail)</i>	<p><b>Year 1:</b> Municipality codifies and begins implementing an operational plan for landfill covering, at a minimum: (i) site safety; (ii) site staffing; (iii) record keeping; (iv) method and standards for filling; (v) compaction; (vi) cover material; (vii) storing of recyclable materials and compost (along with targets for each); (viii) environmental controls; (ix) equipment maintenance; (x) reporting; and (xi) operation of any complementary facilities. SWMTSC reviews plan for technical soundness and gives ‘no objection.’</p> <p><b>Years 2-4:</b> (i) Municipality satisfies the Year 1 requirement and operates landfill and complementary facilities according to plan (ITVA to spot check); (ii) municipality revises plan and keeps it's associated indicators up to date with current data; (iii) All major revisions pass SWMTSC review.</p>	
2,2	Communications systems  <i>(binary pass / fail)</i>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for managing communications with key stakeholders. At a minimum, this system must be capable of: (i) tracking stakeholder comments received; (ii) tracking resolutions / remedial actions taken to address stakeholder comments; (iii) tracking implementation of the municipality’s SWM outreach and awareness efforts; (iv) tracking which staff member or department has responsibility for managing a particular communications activity; (v) measuring key communications related indicators (e.g. average time to address</p>	

#	KPI	Verifiable indicator	Self-assessment by Municipality
		<p>complaints). SWMTSC reviews communications system and gives ‘no objection.’ NOTE This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Years 2-4:</b> (i) the municipality satisfies the Year 1 requirement and maintains the communications system with up-to-date information (ITVA to spot check); (ii) no stakeholder comment lingers unaddressed for more than 3 months (ITVA to spot check); (iii) Any major revisions to the communications system pass review by SWMTSC.</p>	
2,3	<p>Service delivery monitoring <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality establishes and mobilizes a system for monitoring SWM service delivery. At a minimum, this system includes indicators for capturing: (i) vehicle use metrics; (ii) labor inputs by different tasks (e.g. street sweeping, equipment operation, etc.); (iii) volume or weight of solid waste deposited at landfill; (iv) volume or weight of biodegradable waste composted; (v) volume or weight of different recyclables segregated from the waste stream; (vi) indicators for other segments of the waste stream with unique disposal / recycling processes (e.g. medical waste); (vii) all indicators contained within the Technical Scorecard’s service provision KPIs. <b>NOTE:</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its service delivery monitoring system with up-to-date data for all indicators (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) Data passes quality / veracity spot checks by the ITVA.</p>	
2,4	<p>Fiduciary monitoring system <i>(binary pass / fail)</i></p>	<p><b>Year 1:</b> the municipality codifies a system for tracking SWM service-related financial, contractual, and procurement information including: (i) customer billing; (ii) beneficiary revenue collection; (iii) expenditures on service delivery by different categories or major contracts; (iv) planned or in progress procurement methods, monetary values, and key milestones; (iv) all financial indicators within the Technical Scorecard’s Financial KPIs. SWMTSC reviews fiduciary monitoring system and gives ‘no objection.’ <b>NOTE</b> This system could be a simple spreadsheet and does not need to be technologically sophisticated.</p> <p><b>Year 2-4:</b> (i) the municipality maintains its fiduciary monitoring system with up-to-date</p>	

#	KPI	Verifiable indicator	Self-assessment by Municipality
		information (ITVA to spot check); (ii) any major changes to the system pass SWMTSC review; (iii) data passes quality / veracity spot checks by the ITVA.	
3,5	Waste segregation and composting at household level	Percentage of households practicing proper and correct waste segregation at household level based on random inspection of 10% of households provided with bins for waste segregation and/or home composting.	
3,6	Waste recovery	Targets are established and actual performance is measured (by visual inspection and check records) for recovery of recyclable material and organic fraction in waste stream at transfer stations and landfill (share of recoverable materials actually being separated and recovered/sold/reused).	

**Service provision KPIs**

3,1	Wards served  (% of municipal wards )	% of wards within a municipality’s area that are receiving regular SWM services. The data source for this indicator will be the municipality's service delivery monitoring system.  Target values for this indicator will equal the values agreed in SWM-SIPs. The municipality should be able to evidence that any ward claimed receives the level of service agreed in SWM-SIPs. The ITVA will revise claimed figures downward as observed evidence warrants.	
3,2	Visual cleanliness in public areas, main streets and secondary streets  (% of wards receiving services)	Percentage of served wards/zones with visibly clean public areas, main streets and secondary streets following a random visual inspection by the ITVA.  ITVA inspections will consider: (i) cleanliness of paved sidewalk; (ii) evidence that street sweepers are collecting waste and depositing it appropriately within the collection system; (iii) general absence of litter and rubbish piles. The ITVA may also interview neighborhood residents / business to gauge consistency of observed conditions.	
3,3	Customer Satisfaction  (% of customers perceiving services delivered to SWM-SIP target standards)	% of sampled customers in a ward who report that waste collection and street cleaning services provided have met the standards that the municipality claims for that ward. This indicator captures both service provision and outreach and communications efforts.  ITVA will use a survey instrument to measure the level of service that customers observe and will randomly sample different types of customers (e.g. rural or urban households, businesses, etc.). The ITVA will apply this instrument to a sample of wards in each municipality.	

#	KPI	Verifiable indicator	Self-assessment by Municipality
3,4	Safe disposal of collected waste  <i>(binary pass / fail)</i>	<p>Criteria for passing: (i) methods of transporting waste incorporate reasonable measures for preventing spillage in route to disposal sites; (ii) the municipality disposes of waste only in designated disposal facilities (i.e. no informal dumping); (iii) the municipality's designated disposal facility complies with GoN standards (SMTSC staff to assess and confirm).</p> <p>The ITVA may use visual inspection, interviews with individuals/TLOs, and records for complaints received.</p> <p>Municipality should engage with hospitals/clinics and prepare strategy and action plan for dealing with medical waste (year 1).</p> <p>Municipality in cooperation with SWMTSC on development of new landfill capacity (year 1).</p> <p>A new landfill cell has been established in conformity with Nepali regulation (year 2).</p>	

#### **Financial KPIs**

4,1	SWM fee collection efficiency	Actual collection of SWM fee (deposited in municipal accounts for SWM services) / Potential collection of SWM fee (sum of customers multiplied by service fee) is increased year on year towards a goal of 90%.	
4,2	Increase in SWM fees charged  <i>(% increase on previous year)</i>	Year on year increase in the average annual SWM fee per customer served. This average will apply across all customer types and different fee levels. Target values will reflect SWM-SIP envisaged service area expansion and fee structures.	
4,3	Labor efficiency  <i>(# of staff years per 1,000 paying customer)</i>	# of staff years per year dedicated to SWM divided by total number of customers who paid SWM specific fees during the most recent billing period. If billing period covers less than 1/2 of the year, than this indicator will apply to an average pf periods amounting to no less than 3 months.	

# TPIA Annex 6 – Lalitpur Solid Waste Management Service Improvement Plan (SWM-SIP)

## ***Executive summary***

### ***Existing situation on solid waste management***

The following major challenges within existing SWM system in LSMC have been identified.

#### Collection and transportation service:

- Collection services are provided in all current 22 wards by the LSMC (11 wards) and by private service providers (11 wards)
- There are however no written agreements between LSMC and the private providers, no regulation of tariffs charged by private providers, and no reporting of operational data to LSMC
- Institutions, supermarkets and hospitals have individual written agreements with LSMC for waste collection
- The recent municipal reform will increase LSMC by 3 new VDCs which will need SWM service provision
- Medical waste is not separated in collection from smaller clinics.

#### Recycling and composting:

- The City and the largest private operators each have their own segregation and transfer facilities where recyclable materials are manually segregated from the collected waste, prior to transport of residuals to disposal at Okharpauwa landfill
- A pilot project in ward 22 on sustainable waste management, with household segregation, composting and reuse has been successful in significantly reducing the need for residual waste collection from 2,500 households
- 3,700 Compost bins have been distributed to households at subsidized rates (500 NRP versus full cost of 2,500 NRP)
- An EU funded three years project aiming to reduce waste generation has equipped 12,500 households with segregation bins and compost bins and furthermore includes pilot rooftop gardening, three joint compost plants and one biogas plant for slaughterhouse waste
- There is significant involvement of informal sector workers, NGOs, Kawadi and women's group involved in waste recycling.
- LSMC have established a resource recovery center in Ward 16 where informal sector workers may sell plastic, paper, etc. at regulated prices.

#### Treatment and disposal:

- All waste for disposal is transported to the Okharpauwa landfill (43 km from the city center) which is operated jointly by Kathmandu and Lalitpur
- There is room for improvement of the design and operation of the LSMC segregation and transfer facility, as residuals are stored overnight in the transfer vehicles or at the sorting facility
- The existing landfill has only limited remaining capacity and the long term landfill situation is unclear
- Healthcare waste from smaller hospitals and clinics is disposed at the landfill mixed with municipal waste.

#### Institutional set up for SWM:

- A Solid Waste Management Committee composed of four Ward Chairpersons with relevant municipality staff as observers, usually convenes on a monthly basis
- The Environment and Sanitation Section in LSMC is responsible for SWM with the Public Works Division being responsible for municipal infrastructure projects
- There is no contractual framework between LSMC and the private service providers concerning their involvement in SWM

- The city does not charge households and businesses in the core areas serviced by the City, while waste generators in areas with private service provision have to pay for the service
- The tariff of the private service providers is unregulated and no reporting on revenue collection and service performance takes place
- The Social Welfare Division conducts training programs for women's groups including in relation to SWM
- Private sector service providers such as NEPSEMAC and WEPCO are encouraging and giving training to people for household level composting

Financing of the SWM system:

- The cost of service provision by LSMC (excluding depreciation on assets) has increased from 90.6 Lakh in 20012/13 to a budgeted 95.0 Lakh in 2014/15
- The cost of service provision by the 14 private operators is not known but the three largest reported total costs in the order of 300 Lakh
- LSMC collects 20 Lakh SWM fee from institutions, supermarkets and hospitals but does not presently collect a sanitation fee from households and small businesses in their service areas
- The total sanitation fee collected by the 14 private operators in their service areas is not known, but the three largest reported 289 Lakh in tariff revenues
- The recycling revenues of LSMC are minimal
- The level of revenues from recycling by the 14 private service providers and the informal sector is unknown, but the three largest reported 33 Lakh in recycling revenues
- Cost recovery of the municipal SWM system is zero (2013/14) prior to introduction of a sanitation fee in the LSMC service areas. In contrast cost recovery by the three largest private operators is 93% excluding recycling revenues and 104% including recycling revenues.

### ***Solid Waste Management Service Improvement Plan (SWM-SIP)***

In line with the National SWM policy, the 2014 Solid Waste Management (SWM) Strategic Plan and Action Plan for Lalitpur Sub-metropolitan City<sup>1</sup> (the Strategic Plan) identified the following long term Strategic Objectives in relation to waste management:

- To establish Municipal Solid Waste Management Information System (MSWMIS)
- To improve collection and transportation system of source segregated sources
- To promote 3R approach for waste minimization
- To improve waste treatment and final disposal system
- To promote public participation and behavior change of different stakeholders in SWM
- To enhance organizational, institutional and legal arrangements for effective SWM service
- To develop financially sustainable SWM system
- To facilitate special and hazardous waste management

The following targets are proposed in the strategic plan for recovery of organic and recyclable fraction and waste for landfill over the planning period:

- Recovery of organic waste: Increase from 2% in 2014 to 40% in 2018 and 90% in 2028 at the end of the planning period
- Recovery of recyclable fraction: Increase from 10% in 2014 to 40% in 2018 and 100% in 2028 at the end of the planning period
- Waste for landfill: Decrease from 95% in 2014 to 62% in 2018 and 12% in 2028 at the end of the planning period

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 Lalitpur Sub-metropolitan City. The objectives and targets of the SWM improvements in the four years planning period of the SWM-SIP are:

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<sup>1</sup>Solid Waste Management (SWM) Strategic Plan and Action Plan of Lalitpur Sub-metropolitan City, Ministry of Urban Development, Solid Waste Management Technical Support Center (SWMTSC), Final Report January 2014 (submitted by Engineering Study& Research Centre (P) Ltd,Ministryof Urban Development for Lalitpur Sub-metropolitan City.

- Collection services are provided for all households, institutions and commercials in all wards including the three new VDCs
- Municipal council adopts a policy on gradual introduction of tariffs in LSMC serviced core areas and a regulation of tariffs of private operators in non-core areas
- Appropriate contractual arrangements for waste collection, segregation and treatment by private operators is introduced including requirements for authority income share
- Street sweeping in core area and at main streets and public areas in other areas
- Improved operations practices at transfer and recovery sites
- Recovery of organic waste to reach 40% in 2018
- Recovery of recyclable fraction to reach 40% in 2018
- Plan for healthcare waste management prepared

### ***Necessary investments and TA activities***

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

- Replacement of 15 existing worn out primary collection vehicles with 10 small compactor vehicles in 1st year - 40 Lakh each
- Increase of primary collection capacity through purchase of four new small collection vehicles for narrow roads in 1st year - NRP 13 Lakh each
- Replacement of four existing worn out secondary collection vehicles, two large tipper trucks at the existing temporary transfer station in year 1 and two large tipper trucks at the new transfer station in year 2) - NRP 40 Lakh each
- Improvements in temporary transfer station including removal of old worn out vehicles and establishment of simple material recovery facility (MRF) in year 1– NRP 50 Lakh (SWMTS will also support)
- Front end loader at the temporary transfer station in year 1 – NRP 45 Lakh
- New transfer station including material recovery facility (MRF) in year 2 - NPR 300 Lakh
- Front end loader at the new transfer station in year 2 – NRP 45 Lakh
- Loader for landfill in year 1– NRP 80 Lakh
- Street sweeping equipment (broomer, hand carts and small tippers for collection of sweepings) in year 1 - NPR 100 Lakh

Surveys and feasibility studies:

- Carry out a survey on location of hospitals and clinics and waste generation and preparation of a plan on management of medical waste
- Feasibility study in first year of the OBA project on the establishment of MRF facilities at the existing temporary transfer station and at the new transfer station

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

- Establishing operational manual for segregation and transfer facility operations and management including MRF
- Introduction 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
- Design and implementation of IEC campaigns
- Assistance in development and implementation of information ad awareness campaigns for clean city and source segregation of waste
- Introduction of simple contractual arrangements for private operators in waste collection, segregation and treatment

- Possibly introduction of contractual arrangements for involvement of community based organization (TLOs) in SWM.

### ***Planned financing of the SWM-SIP implementation***

The costs of implementing the SWM-SIP will be paid for by a combination of:

- Government budget commitment
- Collected SWM tariffs
- Service Delivery Subsidy under the OBA project

Lalitpur Sub-metropolitan City is committed to gradually introduce and enforce a SWM tariff to ensure an increase in the cost recovery from the present 2% to 17% over the four year implementation period of the SWM-SIP. This is a fundamental requirement to ensure sustainability of the SWM system after the implementation of the SWM-SIP.

### ***Monitoring and evaluation of the SWM-SIP implementation***

The implementation of the SWM-SIP will be monitored and evaluated by the Solid Waste Management Committee assisted by the Environment and Sanitation Section.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.

The monitoring and evaluation process will be supported by the data in the quarterly Technical Scorecards submitted under the OBA project.