R4D PROJECT:

CHALLENGES OF MUNICIPAL WASTE MANAGEMENT: LEARNING FROM POST-CRISIS INITIATIVES IN SOUTH ASIA

PROJECT WORKING PAPER #3

MUNICIPAL SOLID WASTE MANAGEMENT IN SRI LANKA: LEGISLATIONS, POLICY DISCOURSES, ACTORS AND PROJECTS – WITH PARTICULAR ATTENTION TO TWO MUNICIPALITIES IN THE COLOMBO REGION

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LIST OF ABBREVIATIONS

BUC	Boralesgamuwa Urban Council
DMMC	Dehiwala – Mt. Lavinia Municipal Council
MoLGPC	Ministry of Local Government and Provincial Councils
MOH	Medical Officer of Health
MoH	Ministry of Health, Nutrition and Indigenous Medicine
MoMDE	Ministry of Mahaweli Development and Environment
MoMWD	The Ministry of Megapolis and Western Development
MoPAHA	Ministry of Public Administration and Home Affairs
MoWSCP	Ministry of Water Supply and City Planning
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NGO	Non-Governmental Organization
NSSWM	National Strategy for Solid Waste Management
NSWMSC	National Solid Waste Management Support Center
NEA	National Environmental Act
SLLRDC	Sri Lanka Land Reclamation and Development Corporation

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1. Introduction

In the metropolitan area of Colombo, Sri Lanka, the issue of municipal solid waste management (MSWM) moved to the center of political attention in April 2016 when the accumulated waste mountain of a centralized dumpsite in Meethotamulla, situated at the periphery of the city region, suddenly collapsed. The ensuing landslide-like event killed 28 people, destroyed numerous houses and displaced 180 families. This crisis heightened the general awareness of the municipal solid waste (MSW) problem and led to new ideas for waste-to-energy projects (incineration). For the time being, however, only existing dumpsites (other than in Meethotamulla) have been expanded – even in ecologically sensitive locations such as near water inlets and wetland sanctuaries. This situation raises serious questions about MSWM in Sri Lanka, especially in the Colombo Metropolitan area. In this context, this particular working paper aims to analyze the institutional architecture of waste governance in Sri Lanka with special attention paid to two selected municipalities, namely Dehiwala – Mt. Lavinia and Boralesgamuwa, for the purpose of obtaining a comprehensive understanding of the functions, responsibilities and the nature of the relationship between different actors. This mapping of the institutional architecture is based on an in-depth literature review carried out by the research team using existing research reports, institutional documents, research papers and other relevant documents. The working paper furthermore draws upon interviews conducted with key informants.

2. Legislations in force

2.1. Policy and legal framework for solid waste management

The first piece of legislation pertaining to waste management in Sri Lanka was introduced during the colonial period in 1862, when the British administered the country. The first law was implemented through the ***Nuisance Ordinance*** (15 of 1862) which was subsequently amended (61 of 1939; 3 of 1946; 57 of 1946). The Ordinance vested power in the city government to inspect, regulate and control public nuisance, particularly inappropriate garbage disposal. Certain key functions of the ordinance are still in force with powers been vested in Public Health Inspectors (PHI) at both national and local levels. PHI officers are appointed by the Ministry of Health who work under the supervision of the Medical Officer of Health in each Divisional Secretariat.

Subsequent legislations were introduced in 1939 and in 1947 through the ***Urban Council Act*** and the ***Municipal Council Act,*** respectively. However, during the establishment of

Provincial Councils in 1987, many of the political administrative legislations were amended and reformed.

At present in Sri Lanka, the basic legal framework required for MSWM is provided under an umbrella of the Central Government, the Provincial Council (PC) and the Local Authority (LA) regulations and legislations. The ***13th Amendment to the Constitution*** (1987) and the ***Provincial Councils Act*** No. 42 of 1987, Sections 129, 130 and 131 of the ***Municipal Councils Ordinance*** (1980), Sections 118, 119 and 120 of the ***Urban Councils Ordinance***, No. 61 of 1989, Sections 41 and 93 to 95 of the ***Pradeshiya Saba Act***, No. 15 of 1987 are key instruments of legislations pertaining to waste management in local authorities. According to the Municipal Council Ordinance, the Urban Council Ordinance and the Pradeshiya Saba Act, all MSW generated within the boundary of Local Authorities (LAs) belongs to the authority itself, and LAs are therefore mandated to remove and dispose of such waste materials without causing any nuisance to the public. This implies that of all the municipal waste management functions, the most daunting task for the LAs remains to be waste collection: the process of gathering waste from places of generation and transporting them to where they are stored, treated or disposed of (Batuwitage, 2004 cited in Kuruppuge & Karunarathna, 2014).

Also relevant for MSWM in Sri Lanka is the ***National Environmental Act***, No. 47 of 1980 (NEA), enforced with the aim of establishing a regulatory authority, the Central Environmental Authority (CEA) under the Ministry of Environment (since renamed Ministry of Mahaweli Development and Environment), for environmental monitoring and regulation. The CEA was expected to administer the approval, monitoring and regulation of all environmentally sensitive activities.

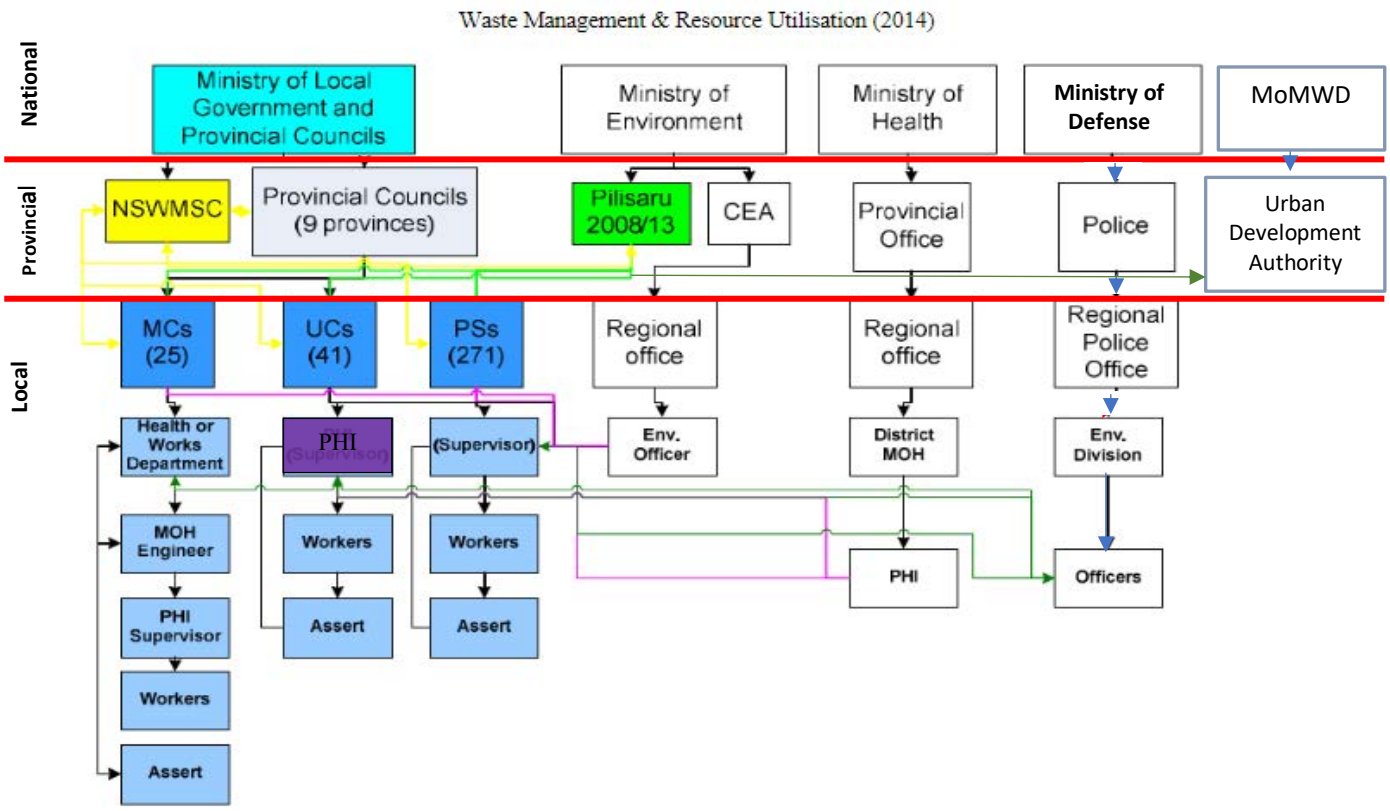
Although the LAs are administered by the Ministry of Local Government and Provincial Councils and through respective Provincial Councils, draft national strategies and the first national policy on MSWM were introduced through the Ministry of Environment. At present, it has been recognized that the first policy attempt has failed due to poor participation of stakeholders such as the LAs, the CEA, and the Western Province (through its Waste Management Authority).

2.2. The national waste governance structure

Despite the legislations that give responsibility for MSWM to LAs, Sri Lanka can be said to use a relatively centralized approach to Solid Waste Management. This is in line with some development scholars who argue that localized governance and decision making are not necessarily the solution to achieve social justice and environmental sustainability (Purcell & Brown, 2005) and call for a strong involvement of central governments in environmental management (Owens & Zimmerman, 2013). Furthermore, attempts at participatory co-management of coastal lands and resources in Sri Lanka failed to empower local communities due to the larger political context (Landstrom, 2006).

There are various central government ministries and agencies that have important functions in the implementation of waste management in Sri Lanka. Apart from the abovementioned Ministry of Local Government and Provincial Councils (MoLGPC), which is responsible for the LAs, and Ministry of Mahaweli Development and Environment (MoMDE), which provides administrative guidance for environmental protection, the Ministry of Megapolis and Western Development (MoMWD) (through its responsibilities for infrastructure planning and development), the Ministry of Health, Nutrition and Indigenous Medicine (MoH) (through its responsibilities for public health and sanitation), and the Ministry of Defense (through its Police Environmental Protection Division) play important roles in MSW governance (see Figure 1).

Figure 1. Institutional framework for MSW management in Sri Lanka



Source: adapted from Kuruppuge & Karunarathna, 2014)

The following table represents an overview of the duties and jurisdiction of the major national level institutions in MSWM

Ministry/Institution	Main Responsibilities
1. Ministry of Local Government and Provincial Councils (**MoLGPC**)	Implementation of policies and plans for LAs through the nine Provincial Councils (PC) in Sri Lanka Coordination between the central government and PCs Supporting the formulation and implementation of the national policy related to PCs and LAs Providing financial and technical assistance, providing assistance for human resources

	development and performing research for good governance.
2. Ministry of Mahaweli Development and Environment (MoMDE)	Formulating national policy in relation to waste management
3. Central Environmental Authority (CEA)	Responsible for supervision and management of solid waste
4. Ministry of Megapolis and Western Development (MoMWD)	Finding solutions to resolve garbage problems Coordination between ministries
5. Ministry of Health, Nutrition and Indigenous Medicine (MoH)	Jurisdiction over the making, monitoring and management of medical waste Modifying the Healthcare Waste Management National Policy to encourage proper disposal of medical waste. Dispatching Public Health Inspectors
6 Ministry of Defence	Urban development and Environment Police

2.2.1. Ministry of Local Government and Provincial Councils (MoLGPC)

The Ministry of Local Government and Provincial Councils (MoLGPC) is responsible for the implementation of policies and plans for LAs through the nine Provincial Councils (PC) in Sri Lanka. In addition, it is responsible for coordination between the central government and PCs, supporting the formulation and implementation of the national policy related to PCs and LAs, providing financial and technical assistance, providing assistance for human resources development and performing research for good governance. Other institutions functioning under this ministry, such as the Local Loan and Development Fund (LLDF), are responsible for funding Las, and the Sri Lankan Institute of Local Governance (SLILG) is responsible for administrative capacity building and research for LAs.

2.2.1.1. National Solid Waste Management Support Center (NSWMSC)

The NSWMSC was established under MoLGPC in 2007 as recommended by the JICA Study on the Improvement of Solid Waste Management in Secondary Cities (2002-2003) in order to assist the LAs technically and financially to improve the MSWM. The staff consists of 15 officers (1 Director, 3 Assistant Directors, 10 Development Officers, and 1 Management Assistant) who have the following key duties:

- provide a variety of manuals and guidelines to facilitate LAs to implement proper SWM

- provide technical assistance on SWM to LAs
- collect and study information on the current SWM practices and the practices in LAs, as well as those in foreign countries, and disseminate that information to LAs
- facilitate LAs to get technical and financial assistance from NGOs and donors
- promote, evaluate, and make recommendations for the National Strategy for Solid Waste Management
- collect and analyze waste management data of LAs.

2.2.2. Ministry of Mahaweli Development and Environment (MoMDE)

This ministry (earlier known as Ministry of Environment; Mahaweli is a major river in Sri Lanka) is responsible for the formulation of a national policy for waste management. In 1998, a Sri Lankan municipal waste database was compiled with revisions made in 2005. In the preparation of the database, the ministry utilized waste generation and waste composition surveys to allow LAs to understand the importance of recycling, the significance of proper waste collection, intermediate treatment, and final disposal.

2.2.2.1. Central Environmental Authority (CEA)

The Central Environmental Authority (CEA) was established under the National Environmental Act (NEA) of 1980 and is one of its main implementing arms, organized under the MoMDE. The agency is expected to administer the approval, monitoring and regulation of all environmentally sensitive activities. As such, the CEA is also responsible for the supervision and management of solid waste. It consists of six major divisions such as Human Resource Development, the Administration & Finance Division, the Environmental Pollution Control (EPC) Division, the Environmental Management and Assessment (EM&A) Division, the Environmental Education and Awareness (EE&A) Division, the Project Division and the Provincial Networking Division.

The Environmental Assessment Unit, which functions under the Environmental Management and Assessment Division, is responsible for implementing the Environmental Impact Assessment process according to the NEA. The Environmental Pollution Control Division is engaged in regulatory activities associated with the contamination of air and water, soil and industrial pollution. These functions are performed by the following four units: Pollution Control Unit, Waste Management Unit, Laboratory Services Unit and Monitoring Unit.

The Waste Management Unit is in charge of formal Waste Management. The Project Division consists of the following four units: the Pilisaru Waste Management Project Unit, the Waste Disposal Facility Construction Unit, the National Post Consumer Plastic Waste Management Project (NPCPWMP) Unit and the Sanitary Landfill Site Unit.

2.2.2.2. Pilisaru Program

During the period of 2001-2010, the CEA undertook a successful effort to improve overall MSW management conditions in Sri Lanka with the support of the Japanese International Cooperation Agency (JICA, 2007). After a preliminary study, Meethotamulla and other dumpsites were rehabilitated by digging leakage drains, creating facilities to dump biodegradable and non- biodegradable waste, and treating contaminated water sources.

In 2008, under the chairmanship of the then Ministry of Environment and the CEA and together with the participation of other government organizations, private institutions, NGOs and various technical experts, Pilisaru, a national program for upgrading the MSWM sector, was initiated. The Pilisaru program promotes the 3R concept and resource recovery from MSW prior to final disposal. By the end of year 2013, approximately 125 LAs were financially assisted by the Pilisaru program which provided technical support for the development of MSWM. A significant tangible outcome of the program was the establishment of composting facilities in more than 100 LAs in Sri Lanka.

2.2.3 Ministry of Megapolis and Western Development (MoMWD)

Following the elections in August 2015, the Cabinet of Sri Lanka established the MoMWD. The ministry is entrusted with the responsibility of discovering solutions to resolve garbage issues, housing problems of shanty dwellers and drawing new traffic plans to avoid traffic jams in busy towns. Since each LA is legally responsible for managing local MSWM activities, MoMWD is not directly involved in SWM but it assists LAs in MSWM. Furthermore, since there are many MSWM-related projects and initiatives organized by different ministries and authorities, there was a felt need to create a mechanism for overall coordination. In response, MoMWD established a Committee of Secretaries, which consists of the secretary (highest level bureaucrats) of the following ministries:

- Ministry of Water Supply and City Planning (MoWSCP)
- Ministry of Mahawali Development and Environment (MoMDE)
- Ministry of Local Governance and Provincial Councils (MoLGPC)
- Sri Lanka Land Reclamation and Development Corporation （SLLRDC）

- Provincial Council of Western Province[1]

The Committee of Secretaries collectively manages the activities of individual institutions and all SWM projects require the approval from the committee prior to implementation.

2.2.4 Ministry of Health, Nutrition and Indigenous Medicine (MoH)

The MoH has jurisdiction over the monitoring and management of medical waste; it also has prepared the Healthcare Waste Management National Policy. This policy encourages proper disposal of medical waste by dispatching Public Health Inspectors (PHIs) to all cities and towns who supervise waste management activities. The Divisional Secretary has jurisdiction over the Medical Officer of Health (MOH), and works together with the PHI to maintain the National Solid Waste Management Support Center (NSWMSC).

The CPHI (Chief PHI), via the Public Health Department in LAs headed by a PHI, oversees the actual operations and management of municipal waste. The (C)PHI organized the collection, transportation and disposal of waste; he/she also gives guidance and training regarding waste collection and supervises the health management of waste collection workers (e.g., the wearing of protective gloves). In addition, PHIs are in charge of recording the attendance of waste collection workers, deal with complaints from residents, and allocate collection area(s).

2.2.5 Ministry of Defense

During President Rajapaksa's tenure (2005-2015), urban development was given priority and was assigned to the Ministry of Defense led by Gotabaya Rajapaksa, the brother of the president, due to political affiliations. This paved the way for the involvement of human and technical resources of the military in urban development, including city cleaning and waste management very prominently. The Defense ministry assumed control from the Urban Development Authority which was responsible for the planning and constructions in urban areas, including Colombo, Galle and Kandy. Colombo's urban development was driven by the idea of transforming it into a "world-class city" and a "preferred destination for international business and tourism", according to the Secretary to the Ministry of Defense and Urban Development.

The Urban Development Authority implemented the Metro Colombo Urban Development Project which initiated numerous sub-projects for urban development. For example, the

[1] In the future, all provinces are expected to be represented in this committee by their respective chief secretary.

drainage infrastructure, such as primary and secondary canals and lakes, as well as micro drainage channels within the city, was improved. Furthermore the Beire Lake, which had been neglected for years, was rehabilitated and improvements were made to the Beddegana Park in Kotte. Furthermore, the so-called Green Growth Programme was carried out to protect marshy areas in the metro region, enhance biodiversity parks, reduce greenhouse gas emissions and improve the eco-friendly nature of the city. A number of new lakes were built in the Sri Jayawardenepura Kotte area, including Rampalawatta, the low-lying areas of Pelawatta, and in Thalawathugoda. The Weras Ganga Basin Storm Water Drainage & Environment Improvement Project involved dredging of the Weras Ganga as well as improvements to the drainage of the Bolgoda Marsh and the development of several canals in Colombo.

Finally, the Police Environmental Protection Division (commonly known as “environment police”) was created with the aim to maintain and to sustain these projects – which was a first for Sri Lanka.

With the regime change in 2015, the urban development portfolio was attached to the newly formed Ministry of Megapolis and Western Development and thus detached from the Ministry of Defense (Wickremasinghe, 2010). However, this changed again with the election of Gotabaya Rajapaksa as President of the Republic in November 2019. On the very second day of been sworn on as the president, the Environmental Police was reactivated. Environmental units have been re-established in all police stations and officers have been deployed on every road. Accordingly, a new Deputy Inspector General (DIG) and a new director in charge of the Environmental Division have been appointed. Officers attached to this unit investigate acts which are harmful to the environment and coordinate with local authorities to take measures in preventing harmful incidents. They also monitor purification activities carried out by relevant organizations (Police Environmental Protection Division re-established, 2019).

2.3. The local governance structure

As indicated above, supervision rights related to waste management were transferred from the central government to PCs under the 13th Amendment to the Constitution in 1978. Furthermore, LAs officially became responsible for the collection and disposal of waste generated by residents who live in their locality. Only in the Western Province, a special authority, the Waste Management Authority (WMA), is in charge of a cluster waste

management system. An overview of the role and jurisdiction of the various sub-national agencies is indicated below.

There are nine PCs[2] across the country that provide administrative guidance to the district and LAs of their region. The duty of the PCs is to provide administrative services pertaining to the daily life of citizens and the community, including waste management. In order to receive financial assistance for waste management, the LAs have to submit the applications for approval – excluding for small amounts of LKR 5,000-15,000 –to the PC. This procedure also applied to the placement of MSWM staff.

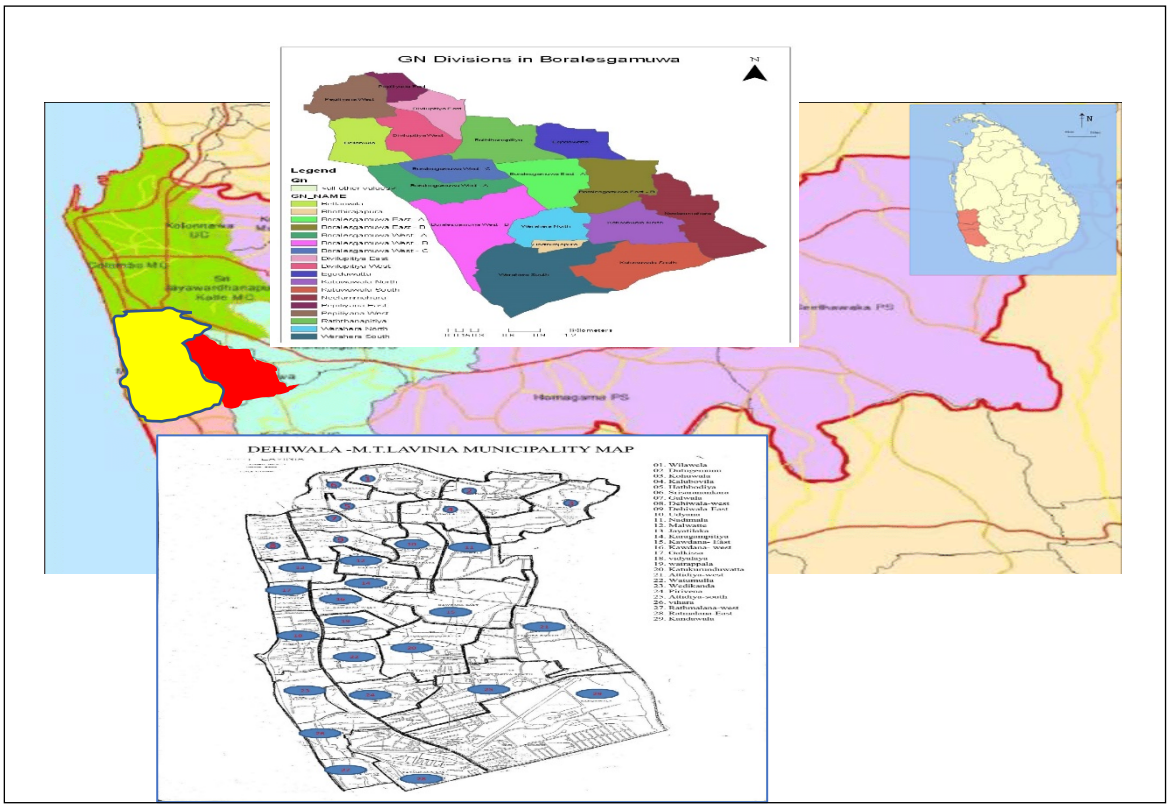
The PC has engineers in its Local Government Department and dispatches these in cases where a LA does not have the technical capacities and needs technical support or guidance for waste disposal, and on request from the LA. LAs are responsible for providing administrative services for the PC in line with the regional environment, such as health and hygiene, waste disposal, regional environmental protection, and park management. Although they are able to formulate laws through the parliament and give instructions to the regional police, it is said that the legislative system of local government is not fully functional.

[2] The nine provincial councils are Western, Uva, Southern, Northern, Eastern, North Central, Central, Sabaragamuwa and North Western

3. Actors relevant for SWM in the selected local context

The research team has identified multiple actors that play a direct role in MSWM activities in the selected municipalities. It is emphasized here that this analysis of actors is limited to the Western Province of Sri Lanka; the situation differs in other provinces. In particular, the analysis relates to two municipalities: the Dehiwala-Mt. Lavinia Municipal Council, and the Boralesgamuwa Urban Council (see Figure 2).3 In addition, the Western Province Solid Waste Management Authority has been identified as a key actor. Furthermore, informal solid waste managers in the two selected areas are important actors. The following section of the paper discusses these actors in brief.

Figure 2. The municipalities selected for the study



Source: Own data, 2020

[3] The Municipal Councils are large administrative areas which includes multiple cities and their suburbs while the Urban Councils are comparatively smaller and established to control and manage a single city and its immediate suburbs.

3.1 Local Authorities

3.1.1 Dehiwala –Mt. Lavinia Municipal Council

In terms of geographical location, Dehiwala-Mt. Lavinia is a city located in the Colombo District, situated in the south of Sri Lanka's largest city and capital Colombo. Dehiwala-Mt. Lavinia has strong ties with the capital city; it is the largest suburb of Colombo. The Municipal Council has 7 wards under its jurisdiction4 and 28 GN Divisions within its area. According to the 2011 Census Report, there are 245,974 permanent residents in the Municipal Council. It includes the more urbanized center of Dehiwala and the world-famous Mount Lavinia hotel. Spanning over a total area of 20.19Km, Dehiwala is located on the border of Colombo. Mount Lavinia on the other hand, which is also located further to the south, is a residential suburb which consists of beach resorts and restaurants. It is a hot spot for tourism, and laidback nightlife.

The Dehiwala-Mt. Lavinia Municipal Council (DMMC) is responsible for collection of waste generated within its municipal council area. The DMMC has a Solid Waste Management & Environment Protection Standing Committee that directs the Solid Waste Management Department (SWMD), which is headed by the chairperson of the committee. The SWMD is responsible for waste collection and transportation service, public health activities (raising awareness on Dengue fever), sweeping roads, and raising public awareness on waste separation. The SWMD includes the Refuse Collection & Disposal Division where the Public Health Inspector (CPHI), PHI and Health Supervisor are employed. The CPHI and PHI officials are responsible for supervising the waste management activities and monitoring the health and wellbeing of the waste workers.

3.1.2 Boralesgamuwa Urban Council

The Boralesgamuwa Urban Council area is an urban council in the Colombo district. Its extent is 13.5 square kilometers and is made up of 18 GN divisions. According to the 2011 Census report there are 37,260 permanent residents in the Boralesgamuwa Urban Council area.

Similar to the DMMC, Boralesgamuwa Urban Council is responsible for the waste collection activities in their jurisdiction. The council is expected to fund its waste management activities using the revenue the council earns from taxes. However, the

[4] The seven wards are Dehiwala , Mount-Lavinia, Attidiya, Kalubowila, Kohuwala, Nedimala and Ratmalana.

council has been struggling to finance the MSWM activities; the Boralesgamuwa Urban Council records the lowest tax income among the urban councils in the Colombo district. The institutional structure including Solid Waste Management & Environment Protection Standing Committee, Solid Waste Management Department (SWMD) and Refuse Collection & Disposal Division (C)PHIs and corresponding responsibilities mirror that of the DMMC.

3.2. The Western Provincial Council (WPC)

The WPC provides administrative guidance to the districts and LAs of the Western Province. SWM is delegated to the Waste Management Authority (WWMA) established under the WPC. All LAs in the Western Province are expected to manage waste in accordance with the MSW Management Rule No.1 (2008) formulated by the WPC.

The Department of Local Government (DLG) under the WPC coordinates between the LAs and the central government in regard to financial monitoring and to the allocation of subsidies from the central government and WPC; these allocations take into account the sector-specific maximum expenditure (ceiling) established by the Finance Commission and the priority of expenditures set by the Central government.

3.2.1 The Western Province Waste Management Authority (WWMA)

The WWMA, established in 2004 under the Waste Management Statute No.9 of the Western Provincial Council of 1999, is responsible for the supervision of waste management of the entire Western Province. The WWMA Statute No.1 was formulated in 2007 specifying the jurisdiction, function and responsibility of the WWMA. According to this statute, the WWMA is responsible for providing technical and financial assistance to all LAs to build their capacities in SWM, to collect waste-related data, to develop common final disposal sites, and to inculcate waste management discipline in the public (through public awareness activities, environmental education, etc.). The WWMA formulated a five-year Action Plan for 2015 - 2020 with targets such as improving the collection rate to 72% by 2020 from 61% in 2015, increasing the recycling rate (based on waste generation amount) to 38% by 2020 from 17% in 2015, increasing the recovery rate by compost and incineration to 71% by 2020 from 13% in 2015.

Seven out of the 13 LAs in the Colombo District (Moratuwa MC, Boralesgamuwa UC, Kesbewa UC, Dehiwala Mount Lavinia MC, Sri Jayewardenapura Kotte MC, Maharagama UC, Homagama PS) use the Karadiyana cluster disposal sites, and the WWMA is in charge

of its operation and maintenance, including the collection of tipping fees. A Waste Management Plaza is under construction on this site which will include facilities such as a sorting yard, bio-methanization plants and an incinerator in addition to the existing composting facility. Moreover, the WWMA is responsible for the Meethotamulla disposal site which collapsed in 2016. The disposal site is located in the Kollonnawa Urban Council area. The WWMA is taking action to gradually convert the site to a recreational park equipped with cycling and jogging tracks.

3.3 Informal Waste Workers and Entrepreneurs

Informal solid waste managers are important actors in the area. Their significance emanates from the recycling services that informal waste workers, entrepreneurs and traders provide to the public. They utilize the door to door collection and collect recyclable or economically viable solid waste materials. These include metal, glass bottles, plastic items, etc. The collected items are then sold to large scale recyclers for profit. The municipal councils appreciate the service they provide as it reduces the expenses incurred by the municipality for MSWM. However, the researchers did not identify any measures which have been taken by the LAs to openly acknowledge the service provide by informal waste workers and entrepreneurs. Informal waste traders stated to us that they have to face many difficulties when obtaining licenses and other approvals from the councils. Section six of the working paper discusses the situation of informal waste entrepreneurs in detail.

3.4 Politicians

Politicians are other major actors in municipal solid waste management in the selected local council areas. Their influence impacts every aspect of the waste management mechanism, from collection to disposal. An elected politician heads the waste management committee of the municipalities and has the power to decide on waste collection methods, recruiting and dismissing workers and waste collection fees. The waste management committee has other officials such the chief engineer, an assistant commissioner and waste collection supervisors to advice and support the chairperson of the committee. However, they do not have power to take autonomous decisions. In addition, the budget and new regulation on waste management in the selected LAs has to be submitted to the council of elected politicians and has to be passed with a majority vote.

The strong influence of local politicians on waste management in the municipal/urban council has impacted waste collection both positively and negatively. The collected data suggest that when an enthusiastic and energetic politician becomes the chairperson of the council, waste management activities are carried out smoothly and efficiently. Furthermore, it is easy to implement and experiment with new techniques as there is no need to obtain approval from multiple officials. In key informant interviews with government officials it was revealed that the councils of elected members often do not support their suggestions, such as charging a small waste collection fee from the citizens/users, fearing that such actions would impact their voter base. Also, municipal waste collection workers stated that they find it difficult to uphold waste collection rules, such as refusing to collect waste that has not been segregated, due to the pressure from politicians.

3.5 Households

The households living within the two municipal councils are also significant actors in the waste management mechanism. The waste management activities of the municipal councils are funded by the taxes collected from the citizens living in the area. However, it must be noted here that neither of the municipal councils charge a separate waste management fee from the households. But in both studied council areas, they are expected to play an active role in municipal solid waste management activities. With the introduction of segregating waste at the source, citizens are expected to sort the waste at their household into bio-degradable and non-bio-degradable waste. They are also expected to hand over the segregated waste on designated days to waste workers.

3.6 Bilateral donors

Bilateral donor agencies have played a key role in waste management activities in Sri Lanka, such as introducing new technologies, providing funds for implementation of recycling facilities, carrying out national level evaluations of the MSWM system of the country etc. The Japan International Cooperation Agency (JICA) and Korean International Cooperation Agency (KOICA) are the international donor agencies that have contributed the most to MSWM in Sri Lanka.

In 2002, JICA carried out a nationwide survey to identify municipal waste management activities in selected municipal councils in Sri Lanka. Using the survey data JICA funded infrastructural developments and training-based human resource development in the selected LAs. In 2011, furthermore, JICA implemented a project titled "Project for

Development of Pollution Control and Environmental Restoration Technologies of Waste Landfill Sites Taking into Account Geographical Characteristics in Sri Lanka" with Saitama University, Japan. This project, which ran for a period of five years, created sustainable and applicable guidelines for the planning, managing, and preventing of pollution at waste disposal sites. It also developed technologies for low-cost, low-maintenance and low-environmental impact facilities using materials that can be procured locally. Moreover, JICA funded the composting facility at the Karadiyana Waste Management Center. In February 2018, an automated sorting and composting machine was installed as part of JICA's "Verification Survey with the Private Sector for Disseminating Japanese Technologies for Municipal Solid Waste Material Recovery Facilities." (JICA, 2020)

Similarly, KOICA has carried out large scale waste management programs in the country. The Dompe Final Disposal Site is one such project. KOICA started the project for Sri Lanka's first sanitary landfill in Maligawatte in 2008 with the CEA as its Sri Lankan partner. The construction started from 2014 and the operation started in April 2015. The Korea Kunhwa Engineering & Consulting Co., Ltd. was in charge of the design and construction of the landfill. KOICA funded nearly 80% of the project with 4.5 million USD while the government of Sri Lanka contributed the rest ($ 1.5 million USD) (KOICA, 2020). KOICA also fully funded the construction of an incineration facility in the Kotikawattha, Mulleriyawa local council. It is designed to manage 22-25 tons of solid waste per day for incineration out of 40 ton/day of waste collected in the area and the total cost for operation and management is estimated be around 800,000 USD a year. It is questionable whether the local council has the financial ability to cover the management and operational cost of the incineration facility. If it is difficult for the local council to cover the expenses, the construction of the incineration facility is questionable (KOICA, 2020).

3.7 Relationship between actors

The relationships between the relevant actors in the field of MSWM are quite complex (see Figure 3). The two municipal bodies have been given full autonomy to manage solid waste within their respective council areas. The specific tasks that should be carried out by the councils are clearly defined in the Municipal Councils Ordinance discussed in the legal framework section of the paper. The Municipal Councils are expected to fund waste management activities using the revenue that is generated from taxes and other income earning sources.

In Sri Lanka, the Municipal councils have full autonomy to decide the nature and amount of the municipal taxes. This autonomy has both positive and negative impacts on MSWM within the two municipalities. For instance, the DMMC is the second largest Municipal Council in the country after the Colombo Municipal Council. They therefore earn higher revenue from taxes and have the capacity to spend a significantly larger amount to recruit waste workers, purchase equipment, maintain and repair vehicles, etc. This is evident from the large number of laborers and vehicles that the DMMC uses for waste management. Meanwhile, the Boralesgamuwa Urban Council records the lowest income among the Urban Councils in the Colombo district. Therefore, the expenditure on MSWM is limited. The council has to manage the services using a small number of vehicles, which furthermore are prone to breakdowns and often cannot be repaired quickly.

The WWMA is responsible for supervising the waste management activities within the Western Province. The WWMA controls and manages the waste disposal sites within the western province such as the Karadiyana waste disposal site. In addition to maintaining disposal sites and supervising waste management the WWMA experiments with new technology to improve the efficiency of the waste collection, intermediate treatments and final disposal. The authority gets the support of the Central government agencies as well as bilateral donors such as JICA and KOICA to improve the quality and the standards of the waste management services offered by the local councils.

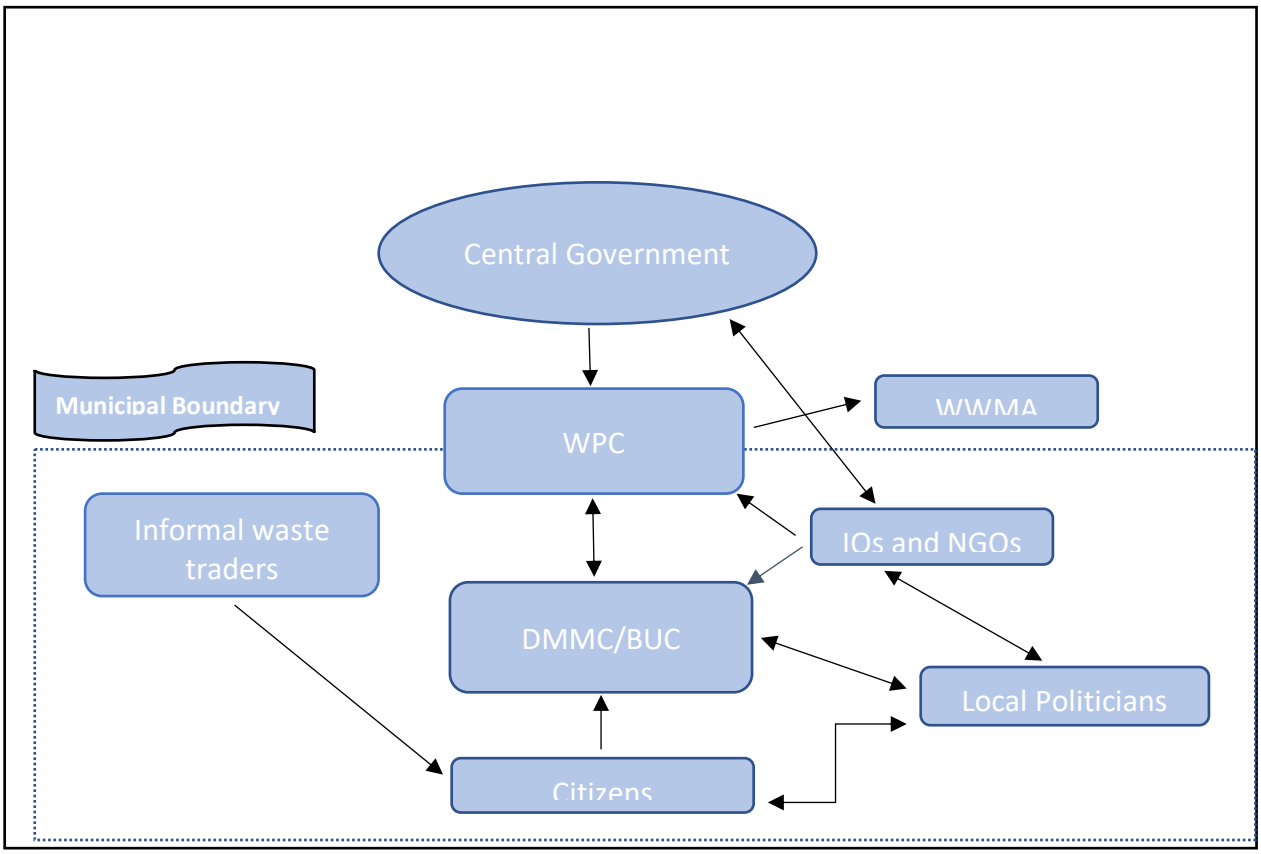
Both the Municipal Councils and WWMA are dependent on the Western Provincial Council to maintain the cash flow from the central government for the development of infrastructure, such as planned dumping sites, modern transportation facilities such as railways, compactors etc. However, this relationship should not be identified as a form of dependency for funds and technology due to the support provided by the WWMA and the financial and regulatory autonomy that municipalities enjoy.

Local politicians can be identified as the most significant actor in the municipal waste management mechanism present in the two local councils. The politicians maintain relationships with the citizens as they are elected by the voters and relations with the WWMA to obtain funds and technological support and training. The WWMA is an authority under the supervision of the Western Province Provincial Council which is governed by a council of elected members. The politicians of the local municipal councils use their connections with the politicians in the Western Province Council to get additional funding and equipment from the WWMA.

In addition to these relationships, the politicians also maintain relationships with the local non-governmental organizations and international donors to receive funds, training opportunities and facilities. If an NGO wants work with the municipal council or the urban council the NGOs have to gain the approval and support of the local politicians. Therefore, the NGOs often organize residential workshops and provide training opportunities to the local politicians to gain their trust and support for their ventures. As the council made up of elected members in each local council has to approve any waste related project or activity the local politicians are highly influential.

There have been incidents in the past where the central government waste management programs had been altered or stopped due to the pressure of local politicians. One such instance is the alterations made to the Dompe sanitary landfill built by KOICA. The initial plan was to use the sanitary land fill to dispose waste from Dompe Pradeshiya Sabaha (Local Council) area and other sub urban areas such as Piliyandala, Kasbawa and Papiliyana. But the politicians of the Dompe Pradeshiya Saba protested against this plan and prohibited other councils to dispose their waste in the sanitary land fill site. The CEA took legal action and filed a case against the local council asking the courts to order the Dompe Pradeshiya Saba to remove the ban. After a two-year legal battle, the courts gave the decision in favor of the Dompe Pradeshiya Saba stating that the local council has the legal authority to decide how the sanitary landfill operates as it is located within its boundaries. The chairman of the Dompe Pradeshiya Saba and the other elected politicians were behind the ban and the legal battle. This is just one instance that demonstrate the power local politicians have over the municipal waste management in Sri Lanka. Politicians also maintain a close relationship with citizens. The citizens lodge complaints related to MSWM to local politicians and they expect the politicians to come up with quick solutions. Thus, politicians are under constant pressure to quickly resolve MSWM related issues. In our key informant interviews with the municipal council officials, they revealed that because of this constant pressure from the citizens, the politicians are often reluctant to approve and implement progressive MSWM laws and regulations fearing the discontent of the citizens.

Figure 3. Relationship between actors engaged in MSWM



4. Discourses on Municipal Solid Waste Management in Sri Lanka

4.1 Introduction

Municipal Solid Waste Management is a key responsibility of the central government as well as local governments. Waste management authorities utilize various technologies, strategies and mechanisms to reduce, control and manage municipal solid waste. Official discourses on MSWM influence and reflect the nature of management strategies that the central government or a local government employs. Municipal waste management strategies have changed and developed over time in Sri Lanka, incorporating new policies, technologies and techniques.

This part of the report draws upon secondary data sources such as ordinances, acts, policies etc. to study the official narratives on MSWM embedded in texts. The secondary data sources were selected and analyzed using a systematic review method. All the policy documents, acts and ordinances issued in Sri Lanka since the colonial times were selected for the study. Furthermore, primary data was gained by conducting in-depth interviews with 17 national and local level experts, government officials, practitioners and policy makers.

All the interviews were recorded with informed consent and were transcribed using word processing software. The transcribed interviews were then analyzed using the discourse analysis method (Metzidaki; 2000).

4.2. Narratives in official documents

The first section discusses official narratives that emerged from secondary data sources, including all the ordinances, acts and policies developed by the Parliament of Sri Lanka and other responsible authorities. The policy documents under consideration were:

- The Urban Councils Ordinance (1939)- Sections 118,119 and 120
- The Municipal Councils Ordinance (1947)- Sections 129-131
- The National Environment Act (1980)- Section 33
- The Pradeshiya Saba Act (1987)- Sections 93-95
- The National Solid Waste Management Policy (2007)

The researchers attempted to identify official narratives of MSWM by paying special attention to how waste is defined, how issues are identified and how solutions are proposed in each of the documents.

4.2.1 The Nuisance Narrative

The narrative presented in the Urban Councils Ordinance suggests that waste management is the sole responsibility of the council; household waste producers, large scale waste producers or the central government are not mentioned as additional key stakeholders in MSWM. This narrative needs to be seen in context: under British rule in 1939, Ceylon had very few urban centers, created for the benefit of the colonizers, and households of ordinary people were able to take care of their own wastes till the stage of treatment and disposal. In the colonial period, there was no overconsumption and hardly any non-biodegradable wastes. However, with the introduction of missionary education, an urban, educated upper-class emerged (Jayawardena, 2000) that adopted the lifestyles of the colonizers including overconsumption. This resulted in the gradual increase in the production of solid waste in the country. Ultimately the British rulers felt it necessary to introduce a waste management component in the Urban Councils Ordinance in 1939.

This ordinance defines municipal solid waste as “All street refuse, house refuse, to be night-soil, or other similar matter” (Urban Councils Ordinance, 1939). It identifies waste as any material that is used and disposed to the streets by households. The ordinance does not take large scale producers of waste such as hotels and factories into account.

The ordinance identifies three key components of MSWM

Cleaning - “for properly sweeping and cleansing the streets, including the footways”

Collection - “for collecting and removing all street refuse”

Disposal - “proper disposal of all street refuse, house refuse, and night-soil all refuse”

Furthermore, it is interesting to note that section 120 of the ordinance identifies waste as a ‘nuisance’:

“Every Urban Council shall, from time to time, provide suitable places convenient for the proper disposal of all street refuse, house refuse, night-soil, and similar matter removed in accordance with the provisions of this Part, and for keeping all vehicles, animals, implements, and other things required for that purpose or for any of the other purposes of this Ordinance, and shall take all such measures and precautions as may be necessary to ensure that no such refuse, night-soil, or similar matter removed in accordance with the provisions of this Part is disposed of in such a way as to cause a nuisance” (Urban Councils Ordinance,1939).

Today, such ‘nuisance discourses’ in South Asia are associated with upper middleclass and middleclass norms (Ghertner, 2008). This nuisance approach is the dominant social narrative in the Urban Councils Ordinance. When a society or community needs to resolve a nuisance, the general approach is to get rid of it and the same applies to waste.

“Every Urban Council shall, from time to time, provide suitable places convenient for the proper disposal of all street refuse, house refuse, night-soil”, signifies that disposal should be carried out in places which are “out of sight”. This means that the urban councils were responsible for providing land outside the urban area to dispose waste. Another term that reveals this nuisance narrative is the term “proper.” The term “proper” refers to appropriate disposal of waste in a location which is out of sight of the educated, middle class and the ruling British. For an example the municipal solid waste collected in 1939 had been disposed at two locations in Colombo and Mt. Lavinia. Kirulapone which was a less populated area, nearly ten kilometers away from the Colombo city area was the disposal site in Colombo. The collected waste was burned using a “Refuse Destructor”, a 32 horse power liquid fuel engine incinerator. The other incinerator was located down Prince of Wales Avenue in Mount Lavinia which was also a less populated area in the 1940s. The waste incineration facility is located nearly fifteen kilometers away from the Colombo city center (CMC, 1939; 1940). However, it must be noted that by this time the other suburbs had not developed and mass scale waste generation took place only in the Colombo

Municipal Council area. According to the records of the Colombo Municipal Council, the incineration of waste was discontinued in the year 1960 due to the high operation and maintenance costs. According to the Report of the Commissioner Colombo Municipal Council (1960) the total cost of operating and maintaining the incineration facilities amounted to 333,699 rupees which was four percent of the total budget of the municipal council.

After discontinuing the incineration facility, the Colombo Municipal Council resorted to dump municipal solid waste in privately owned lands in Muthurajawela, Kirulapana and Aththidiya areas (CMC, 1962). All these places are located at a significant distance away from the Colombo Municipal Council area.

This nuisance narrative has had a long term effect on the waste management process of the country as the open dumping sites selected by the Municipal Councils were marshy lands or paddy land outside the immediate boundaries of the urban centers.

It is interesting to notice that this nuisance narrative advocated by the Urban Councils Ordinance is still the accepted policy approach of local governments. The Municipal Councils Ordinance (1947) and the Pradeshiya Saba Act of (1987) have adopted sections 118-120 of the Urban Councils Ordinance just as they are. As a result, the harmful waste disposal discourse “out of sight out of mind” followed by the colonizers continued and resulted in the creation of large garbage mountains in locations including Blouemandel, Meethotamulla and Karadiyana.

4.2.2 The Environmental Management Narrative

A shift from the nuisance social narratives emerged in the National Environmental Act which was implemented in the 1980s. The act established a special waste management unit under the Ministry of Mahaweli Development and Environment titled “Hazardous Waste and Chemical Management”. This move to establish a unit to manage and preside over waste management under the Ministry of Environment indicates that waste was identified as an environmental issue for the first time in 1980.

The act defines waste in the following manner:

“waste includes any matter prescribed to be waste and any matter, whether liquid, solid, gaseous, or radioactive, which is discharged, emitted, or deposited in the environment in such volume, constituency or manner as to cause an alteration of the environment” (Central Environmental Authority, 1980).

Even though a new waste management unit was introduced, it did not have any direct impact on MSWM as it had no jurisdiction over local governments. The local governments, on their part, continued the nuisance discourse advocated by previous policies.

In 2007, however, the Central Environmental Authority developed a National Waste Management Policy. The policy (as stated in its introduction) was an attempt to "develop an appropriate national policy on holistic waste management" (NWMP,2007). This document can be regarded as the first instance where an "expert discourse" on waste was introduced to the Sri Lankan society. The policy introduces novel technical approaches, management structures and mechanisms to increase efficiency and effectiveness. It defines waste management as an intricate, complex activity which requires expertise and knowledge in the fields of:

I. Technology
II. Management
III. Public Relations
IV. Marketing
V. Administration

This policy in turn shifted a significant amount of power and responsibilities from Local Authorities.

Even though the policy introduces community members as key stakeholders in MSWM, it does not advocate community centric waste management. Rather, it gives the community a very limited role. This is elucidated as follows:

"The mandatory community involvement in managing waste is a significant input to ensure that waste managers perform their duties with the highest degree of accountability and responsibility around the country." (NWMP, 2007)

The sole responsibility of the community is to be vigilant and observe the efficiency and accountability of the local governments.

The policy considers MSWM as a technical issue which can be resolved using technical solutions. The solutions brought in by this technical narrative include the introduction of new technologies and machinery to better manage the collection of waste and managing disposal sites and upgrading of staff capacity through training. The approach does not take social aspects into account- such as cultural practices, consumption patterns and demographic specifications which are significant components of waste management. Ignoring these factors can have a lasting impact on the solutions proposed to resolve waste

management issues. In addition, it must be mentioned here that, although new technologies were introduced to the waste management activities, the discourse remained the same as the waste management authorities continued to practice the “Out of sight, Out of Mind” discourse of the colonial period.

4.2.3 Co-existence of Narratives

In this section we have discussed all the policy documents available on waste management. The oldest document, the Urban Councils Ordinance of 1939 is still in effect with no major changes to the laws on MSWM. Both the Municipal Councils Ordinance and the Pradeshiya Saba Acts which were introduced much later (1947 and 1987) adopted sections 118 -120 of the Urban Councils Ordinance word by word. This suggests that what in recent critical urban studies literature has been identified as a middle class social narrative of waste being a nuisance had underpinned waste policy in Sri Lanka from 1939-1987. This narrative asserts that the problem of waste should be resolved by following the “out of sight- out of mind” approach which has thus been emulated over said years. Even though the Central Environmental Act introduces an “environmental” and “management” discourse of waste in 1980, the nuisance approach introduced by the Urban Councils Ordinance has not gone away. The introduction of the National Solid Waste Management Policy of 2007, too, embodies an environmental and managerial narrative but the policy acts only as a guiding principal for the local governments has no jurisdiction over them. MSW is still primarily considered to be a nuisance, but additionally it is seen as an environmental and managerial issue that can be resolved by technical experts. Therefore, the official waste discourse introduced by the earliest policies has shifted away from the idea of waste as a nuisance only to a limited extent.

4.3 Narratives emerging from verbal accounts

The research team also used in-depth interviews conducted with key informants, mostly government officials but also a few private company actors who have established Public-Private Partnerships with the municipalities, to comprehend the nature of the waste discourse post 2007. Special attention was paid to the impact that the collapse of the Meethotamula garbage dump had on the discourse on MSWM. The key informants included seven high-ranking officers at national and provincial level agencies, such as the Central Environmental Authority, the National Solid Waste Management Support Centre, the Environmental Police, the Western Province Solid Waste Management Authority, and

the Ministry of Mega Polis and Western Province Development; six elected members and government officers from Dehiwala-Mt. Lavinia Municipal Council and Boralesgamuwa Urban Council; and four managers and owners of local private waste management companies.

As discussed in the previous section, the discourse narrative revealed by the existing policy documents suggests that waste is still regarded as a nuisance and additionally as an environmental issue that requires expert solutions. However, the key informants who were interviewed had a different narrative on MSWM. The interviews suggest that waste is perceived as a key responsibility of modern governance and a valuable source of income for the country. The following section discusses the MSWM narratives of the national level officials and the local level officials.

4.3.1 Narratives of national and provincial level officers

As mentioned earlier, the national level key informant interviews were conducted with selected officials of the Central Environmental Authority, Ministry of Megapolis and Western Province Development, National Solid Waste Management Support Centre, the Environmental police of Sri Lanka, and the Western Province Solid Waste Management Authority.

A recurrent narrative that emerged from the interviews with the officials of the central government is that waste management is a key responsibility of the government. An officer of the Central Environment authority stated

“We at the Central Environmental Authority understand the significance of municipal waste management and this is why we have a dedicated center to generate policy guidelines and to monitor the activities of the provincial and local level authorities and councils. If the waste management system fails for a day that is enough to create a serious disturbance to the day today activities of the citizens and the government and private sector activities” **(KII Interviews , 2019 CEA/11/DD/2019/05/12)**

The same narrative was expressed by another executive officer at the National Solid Waste Management Support Centre of the Ministry of Public Administration and Home Affairs,

“Waste management is a key responsibility of the government this is why the government has established multiple organizations to manage the MSWM activities. At the national level we have *the Central Environmental Authority, the Urban Development Authority, Ministry of Mega Polis and Western Province Development and National Solid Waste Management Support Centre to take care of waste management and improve the*

efficiency of the services provided to the masses" **(KII Interviews, 2019 - NSWMSC/01/ED/2019/04/03).**

Another narrative that emerged from the interviews with the national level officials revealed that they view waste as a resource and an income earning opportunity. According to an executive officer of the Ministry of Mega police and Western Province Development waste is an opportunity.

"*I believe that the time has passed where we viewed waste as a burden. In this era we see waste as an opportunity, an asset. If waste is managed using the correct techniques we can earn from each and every bit of waste bio-degradable waste can be turned in to compost manure and non-biodegradable waste can be used for recycling. If we tap in to the potential of waste our waste management system will be self-sustaining. It will also be one of the main income sources of the local councils. Our problem is that we do not manage MSW well. If we manage it properly the opportunities are endless*" **(KII Interviews, 2019 -MMPWPD/01/CTM/2019/06/07).**

An official of the Western Province Solid Waste Management reported in a similar tone:

"*With new technology and innovation in composting, recycling such as one day composting we have come to understand that waste is not waste in reality. By managing different types of waste we can use waste to improve the lives of Sri Lankan citizens. Plastic can be recycled into new plastic material, pavement blocks, can be exported for overseas production, carbonic waste can be turned into compost. Currently we have a very successful composting facility at the Karadiyana Waste Resource Centre. We have reached full capacity in production and still cannot provide an adequate supply for the demand. We currently export 450 MT of compost to Maldives***"** (In-depth Interviews, 2020).

Another national level official had a similar opinion. According to him the government wishes to reduce the burden of waste on the environment by promoting segregation at source and recycling.

"*The way we had deposed waste in the past is a key factor that has contributed to the pollution of the environment and accumulation of mountains of garbage. The government wants to see a change in this and that's why the strict waste disposal laws were introduced by the government in the recent years. By doing so we expect that the public will resort to dispose their waste in more environment friendly ways by segregating waste at home and handing it over to the municipal council tractors. The segregated waste can be turned in to resources such as manure. Also the compost can be used to reduce the use of artificial*

manure in farming which would also significantly reduce the cost the government has to bare to import artificial manure" **(KII Interviews,2020 - DP/01/DEP/2019/05/22).**

4.3.2 Narrative of the local level officials

Our data suggest that the narrative of the local level officials are somewhat similar to the narratives of the national level officials. For instance, the local level officials also regarded MSWM as a key responsibility of the local government, as an official of the Boralesgamuwa Urban Council stated,

"*Managing waste is a key responsibility of the council; after all municipal waste is generated by our community members of each urban council. We have to somehow manage it. Unlike before, now we can earn from waste. So we see it as an asset and we are focusing on providing an optimal service to our community while obtaining the highest possible income from waste*" **(In-depth Interviews, 2020 MY/BUC/01/2019/03/02).**

The quote also reveals a managerial narrative on MSWM which promotes the use of waste as a resource to reduce operational and management costs. This cost-cutting narrative can be viewed as a characteristic of the neoliberal governance in Sri Lanka.

This narrative of waste as a resource also emerged in an interview with an executive Dehiwala - Mt. Lavinia Municiapl Council:

"*Our wards generate a large amount of waste on a daily basis. We have both a highly urbanized Dehiwala City area and the popular tourist destination - Mt. Lavinia is under our purview. As we are spending more than 10 million rupees each month, we have decided to earn as much as possible from the recyclable and reusable waste in the future. We have already invested money to open a large recycling center in Mt. Lavinia in the future*" (In-depth Interviews, 2020 –DC/DMTLMC/01/2019/03/11).

4.3.3 Current discourses: Waste as resource, waste management for beautification

These interviews suggest that the definition of waste by key informants is different to the narratives revealed from the policy documents. The narrative presented here defines waste as a resource or an asset. This narrative seems to have developed due to many factors. As mentioned by an official of the Western Province Waste Management Authority, the introduction of new technology and innovation has played a key role in the change of the narrative. The technical developments in recycling – from producing recycled items to generating electricity— have gradually reached the Sri Lankan waste management system. These technologies have converted smelly and dirty waste into a profitable source

of income. The Sri Lankan waste management authorities of the central, provincial and local governments have adopted this narrative with open arms.

Nevertheless, it was also revealed that the nuisance narrative has not disappeared completely, as one of the interviewed mayors stated:

"*We are always attempting to keep the city clean. Our collection vehicles always start from the city center and clean all the waste that is piled up on the road sides of the city. When people go to work the city should look clean and beautiful***"** (In-depth Interviews, 2020).

A similar statement was made by an officer of the Central Environmental Authority:

"Waste is not a nice thing to look at. We always instruct the councils to keep the cities clean and pleasant. The previous government invested a lot in city beautification projects. The small streams flowing through the cities of Bellanwila and Kotte were cleaned thoroughly. Previously these locations were filled with PET bottles, beer cans and even garbage bags thrown by community members. The Urban Development Authority created a new walking path and a bicycle track there" (In-depth Interviews, 2020).

These statements suggest that the nuisance narrative is still present despite the positive definitions given to waste. Now, waste is regarded as a nuisance as it impacts the beauty of the city. The government of former President Mr. Mahinda Rajapaksa invested heavily on beautification projects in the metro Colombo region as well as in sub-urban areas such as Kotte, Bellanwilla and Baththaramulla. One of the key initiatives of these beautification programs was to get rid of waste from cities and to manage them outside these territories. The present President, his Excellency Gotabaya Rajapaksa, (then Defense Secretary) led this movement, committing himself to make Colombo the 'Green City of Asia'. This beautification narrative introduced by the present president seemed to have influenced officials at all levels heavily.

To sum up, the narrative on waste has become more positive although the definition of waste as a nuisance is still prominent in the discourse due to the influence of beautification projects carried out by the previous central government.

4.4 Impact of the Meethotamulla Disaster

The analysis of the secondary data revealed key actors of the MSWM discourse in Sri Lanka. It identified the government of Sri Lanka as the most prominent actor in shaping the official MSWM discourse. The 1939 Urban Councils Ordinance was the first instance when the central government had intervened in decisions pertaining to MSWM in Sri Lanka. The 1939 colonial government introduced the Urban Councils Ordinance to manage Municipal Solid Waste in the cities of Colombo, Kandy and Galle. However, the ordinance did not establish a specialized organization to manage municipal waste. Only in 1980 the government established the Central Environmental Authority, which was a specialized organization with waste management as a key responsibility. Moreover, in 1999 the Western Provincial Council established the Western Province Waste Management Authority as a specialized organization to address waste management issues in the Western Province. However, the Central Government of Sri Lanka has remained the key actor in the MSWM discourse as provincial and municipal level organizations do not have the power to shape the national discourse on MSWM.

The key informant interviews identified that the collapse of the Meethotamulla waste mountain was instrumental in convincing both the responsible authorities, politicians and Sri Lankan citizens that the existing MSWM system made waste to become a serious issue. Accordingly, the Meethotamulla disaster can be identified as a major event that changed the MSWM discourse in Sri Lanka.

A ministerial consultant stated that,

"*MSWM in Sri Lanka is a problem only because of the inefficient and ineffective management system. Meethotamulla was one such site that lacked a proper management system, Waste was not properly segregated. Mixed waste was dumped creating a mountain that was over 29 meters high. The collapse of the dump is a tragedy. But the incident created an opportunity to drum into heads of administers, politicians and the public that segregation is a must and new technology has to be introduced to the other open dumping sites to avoid a similar disaster from occurring***"** (In-depth Interviews, 2020).

An officer of the Dehiwala-Mt.Lavinia Municipal Council remarked:

We initiated a programme called 'waste segregation at the source' a few months before the Meethotamulla disaster. However. waste segregation remained at 10% to 20%. After the disaster struck, this percentage increased to nearly 60% at once. For the first time, the

majority of the people, especially individuals living in the urban areas began to see how improper waste management can create serious issues" (In-depth Interviews, 2020).

Another officer of the Central Environmental Authority stated that the Meethotamulla disaster played a key role in improving the waste management system in the Colombo district. This was elaborated as follows:

"*Prior to the Meethotamulla disaster, the Kesbawa Urban Council managed the Karadiyana open waste dumping site. However, the site was not properly managed and that created long term impacts on the environment, with the Weras ganga (a river that runs through the area) being severely polluted and communities living close to the dump suffering from illnesses. However, after the Meethotamulla disaster, the Western Province Solid Waste Management Authority took over the management of the site. The management has become better now and only segregated waste is dumped in the area*" (In-depth Interviews, 2020).

These statements by the key informants reveal that the Meethotamulla disaster has impacted the discourse on waste management. The disaster has played a role in convincing the administrative officers and the public on better waste management practices. This is evident from the dramatic increase in waste segregation at source after the disaster which is increasing steadily.

4.5 Conclusion

The findings suggest that the municipal waste management discourse in Sri Lanka is shaped by a nuisance narrative. The narrative has emerged out of the regulations of the Central Government of Sri Lanka. The nuisance narrative was introduced to the MSWM discourse in the year 1939 under the British rule to manage Municipal Solid Waste generated in a few urban centers. Despite this limitation, the successive governments of Sri Lanka continued the nuisance narrative. In the year 1980 with the introduction of the Environment Act, a new narrative of environmental pollution was inducted into the nuisance discourse. This new narrative justified the "out of sight- out of mind" nuisance narrative of the MSWM discourse and supported the continuation of the narrative. In the late 2000s the Central Government of Sri Lanka introduced an "urban beautification" narrative to the MSWM discourse which further reinforced the nuisance narrative of Municipal Solid Waste Management in Sri Lanka. In conclusion, the Municipal Solid Waste Management

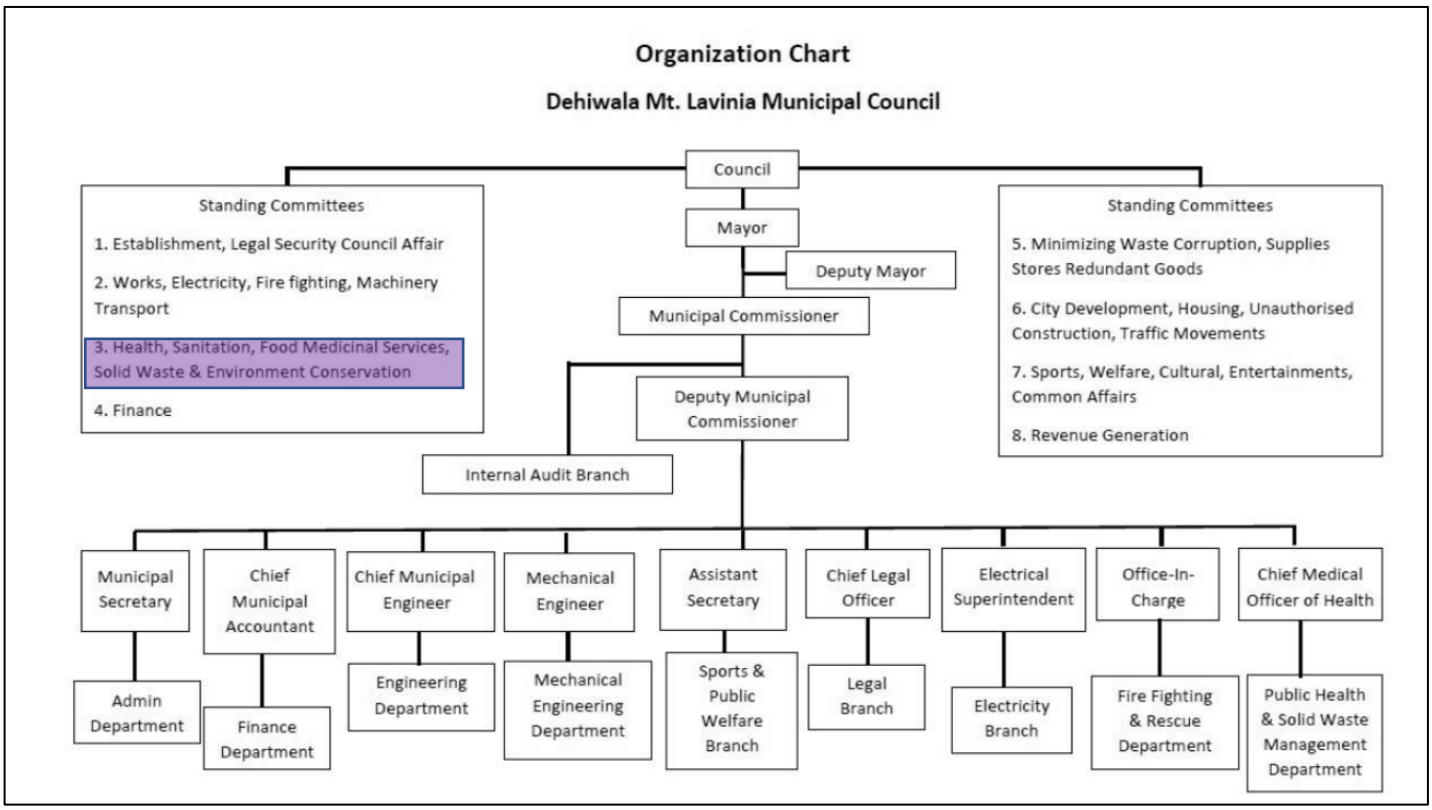
discourse in Sri Lanka can be defined as a nuisance discourse reinforced by contextual narratives such as environmental issues and urban beautification.

5. Official SWM in the selected municipalities: practices and projects

5.1 Dehiwala-Mt. Lavinia Municipal Council

As mentioned in section 3, the municipal Refuse Collection & Disposal Division is responsible for cleaning services together with waste collection and transportation of waste from each ward. The Health Education Officer carries out public awareness programs for waste separation while the Environment Assistant implements other environmental protection programs. Mechanical Engineers in the Transport & Engineering Division are in charge of maintenance, repair, and inspection of collection vehicles such as tractors and trailers, this position does not exist in the DMMC. Further, even though there are 2 MOHs, they are not actively involved in SWM activities. Figure 4 illustrates the organizational structure of the DMMC.

Figure 4. Institutional structure of the Dehiwala - Mt. Lavinia MC



Source: DMMC Presentation, 2019

5.1.1 Municipal collection system

According to a 2019 municipal council report, approximately 200 metric tons per day of waste are generated in the DMMC area and around 150 to160 metric tons are collected by the DMMC. DMMC has a door-to-door waste collection service with specific dates to collect bio-degradable waste and non-biodegradable waste. At the moment, waste generated at the household level is segregated into two types, namely degradable and non-degradable waste. 60% of what is collected is non-degradable (polythene, plastic and PET bottles). Biodegradable waste such as kitchen waste, leaves, branches etc. is collected on Mondays, Wednesdays or Fridays; non-biodegradable waste is collected on Saturdays or Tuesdays or Thursdays.

According to a municipal officer at DMMC, the support that municipal waste workers receive from households varies. For instance, in some households it is easier to collect waste because some people bring all the household waste outside the house to be collected when they hear the horns and shouts of the workers. In the case of other households, however, the municipal waste workers have to ring the bell and wait for a considerable period of time to collect the garbage; this is time consuming. According to a municipal official, the houses located in high income areas of the municipal council are generally less cooperative.

After collecting the waste from households, the waste workers go through the collected waste and select the items that can be sold. They sell PET bottles, glass, aluminum, iron, paper, etc. to informal waste vendors. They do this as an additional source of income and they divide the payment they receive from selling the non-biodegradable among themselves. The municipal council is aware of this practice and they have allowed the waste workers to carry it out. In the DMMC area, there are about 26-30 of private traders who buy approximately 10 metric tons of recyclable waste per day.

Records from the truck weighing bridge at the Karadiyana Waste Management Center show a volume of 170 tons/day. In a year, the DMMC on average pays 72 million rupees to the Karadiyana Waste Management Center. The center charges LKR 400 per metric ton of biodegradable waste and LKR 1800 per metric ton of mixed waste.

The DMMC started waste segregation in October 2015 in 13 wards of the Rathmalana area on a pilot basis. This was extended to all 29 wards in Dehiwala within two months. While DMMC started segregation of waste just before the Meethotamulla crisis, the relative success of this initiative has been influenced by the Meethotamulla crisis. “*By January*

2015, we segregated only around 0.5 % of waste, somehow we increased this over the years gradually and, by 2017, it was 39%. At the moment 40% of the total waste is segregated at household level. Ideally it should be 55% but it is around 40%. (In-depth interview, 2019- PHI/DMMC/03/2019/04/02). With constant encouragement from the DMMC, segregation of waste now has increased to 42%.

The Dehiwala Mt. Lavinia Municipal Council collects a fee by truckload from large waste producers (more than 500kg/day) depending on the type of waste. As of 2015, a collection fee was imposed on approximately 900 large waste generators.

5.1.2 Intermediate treatment

There are small-scale biogas facilities and two recycling facilities in the Municipal Council where recyclables are sorted after the implementation of separate collection. As mentioned above, valuable materials are taken out by the waste workers during the collection process and sold to shops on the way to the Karadiyana waste management facility. However, after the implementation of waste separation at the household level, some valuable recyclable materials are also brought to recycling facilities where they are sorted. Furthermore, this recycling facility receives waste brought directly by neighboring residents.

By the end of 2018, the DMMC received two bailing machines which are used to press recyclable wastes in to small bails. Prior to this, the DMMC had established a recycling center where the collected polythene was trampled by foot and bailed. “Then we sent all the PET bottles to be bailed. There are 29 GNs in our locality and each has a warehouse called a muster (solid waste centers). Certain musters are in charge of 2-3 GN divisions at times”.

5.1.3 Challenges

When managing MSW, the Dehiwala –Mt Lavinia Municipal Council faces many challenges such as the lack of funds, emergence of new types of waste, lack of a waste collection center etc.

An official of the DMMC stated that, lack of funds is a major issue faced by the DMMC. This was described as follows: *“The DMMC pays over LKR 6 million to the Karadiyana Waste Management Center; salaries for the waste workers alone amount to LKR 4 million each month. Each month the cost for waste management amounts to at least LKR 10 million. However, we do not collect a waste tax or a fee from the residents. I have repeatedly requested the council to impose an annual tax to subsidize the waste collection*

process. But the council disagrees with the proposition of imposing a tax as they fear they will lose votes. As the chairman of the standing committee is also an elected member we find it difficult to sometime get these positive measures approved also at the Standing Committee" (In-depth Interviews, 2019 – AC/DMMC/01/2019/05/12).

Due to demographic changes, new types of non-recyclable and harmful waste have become common place. One such type of waste are adult diapers; due to the increase in the aged population the numbers of discarded adult diapers have increased. According to an executive officer of DMMC "*These diapers cannot be recycled and they are extremely harmful to the environment. We do not have a facility to store these items. The Karadiyana Waste Center has informed the DMMC that they will stop accepting adult diapers from next year. If this happens we will face a significant issue*" (In-depth Interview, 2019 – PHI/DMMC/03/2019/04/05). Similarly, electronic waste is another type of waste which creates problems. An official of the DMMC stated, "*Electronic items are also an issue. Informal waste traders buy electronic waste. They burn the electronic items to extract different types of metals from these items such gold, copper etc. Then the burnt residue is dumped in abandoned lands without taking proper safety measures; these remnants are highly cancerous*" (In-depth Interview, PHI/DMMC/03/2019/04/05).

Another issue is the inconsistency in the attendance of the waste workers. An official of DMMC stated, *"As the workers are exposed to harmful substances they get ill quite often. We have given them gloves, masks and boots to collect waste. They do not use this equipment and because of that they have skin rashes on their legs, and pus sacks. Not just that, as most of the waste traders are old, they suffer from non-communicable diseases such as hyper tension, diabetes, cholesterol etc. But they do not take their medicine properly and use alcohol and drugs on a daily basis; because of these issues almost every day we are short on staff"* (In-depth Interview, 2019 – AC/DMMC/01/2019.05.11).

Absence of a collection center is another major issue for the DMMC. According to an official of DMMC, "*We only have two bailing machines. If these two don't function, then we do not have an alternative. We can't ask people to keep the waste with them also. We need a proper setup to function daily. We can stop sending waste to Karadiyana totally, but we do not have the capacity to do so. We will have to establish a recycling center in Rathmalana. If we directly export without paying intermediaries, we can earn a significant income. We have already tabled a proposition to the council to start a waste collection center in*

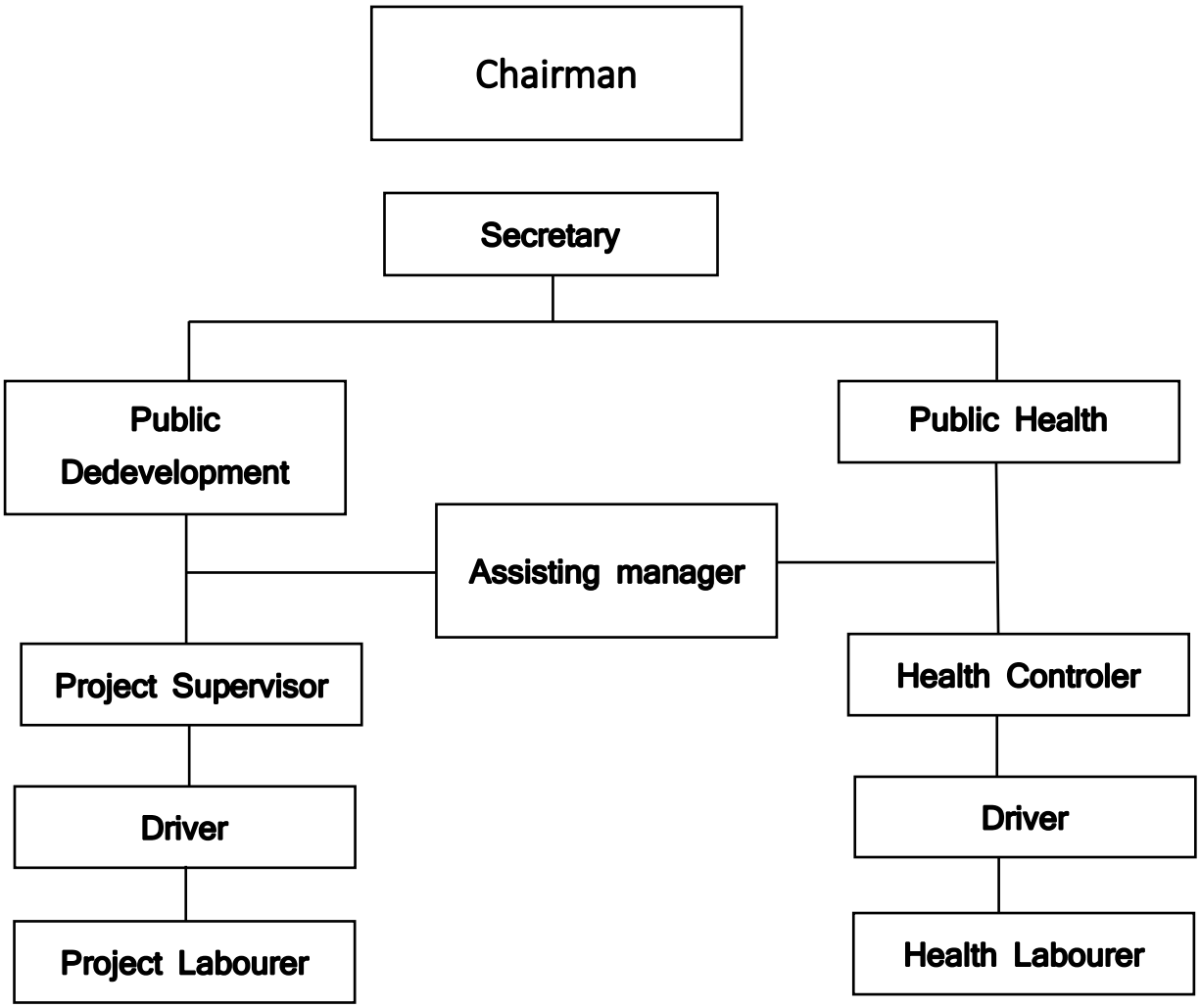
Rathmalana- if we get the approval we can start a center next year" (In-depth Interview, April 2019).

5.2 Boralesgamuwa Urban Council Area (BUC)

5.2.1 Municipal collection system

The Solid Waste Management Department of Boralesgamuwa is smaller than that of DMMC (see Figure 5) but has the same functions. As in DMMC, the Refuse Collection & Disposal Division is responsible for for the cleaning services together with waste collection and transportation of waste from each ward.

Figure 5. Structure of the Boralesgamuwa Urban Council Solid Waste Management Department



Source: Boralesgamuwa MSW strategic plan Presentation, 2019

The Health Education Officer carries out activities related to raising public awareness on waste separation. Mechanical Engineers of the Transport & Engineering Division are in charge of maintenance, repair, and inspection of collection vehicles.

As for the storage and discharge of waste in the Boralesgamuwa Urban Council, separate collection systems have been established in all wards under its jurisdiction. Residents have been instructed to discharge separated organic waste and other waste in different plastic bags. Since door-to-door collection service is provided by the Urban Council, residents put waste on the roadside in the morning of the designated collection day. Under the supervision of the PHI, 10 collection drivers and 40 collection workers (including road sweepers) collect waste. Waste collected by the Boralasgamuwa Urban Council is transported to the Karadiyana dumping site. Truck scale at the waste facility indicates a waste volume of 34 tons/day from Boralesgamuwa. The Boralesgamuwa Urban Council does not charge any waste collection fee from households.

The waste workers of BUC collect bio-degradable waste on Mondays and Tuesdays while non-biodegradable waste is collected on Wednesday and Saturday of each week. In addition, the BUC also collects waste from the Boralesgamuwa market area on a daily basis from 5.30 a.m. to 6.00a.m. The BUC encourages traders and vendors to segregate their waste and keep it on the road sides for collection. However, an official of the Urban Council stated, *"Even though we ask them to segregate waste they don't do it. They know that we have to clean the city at any cost. If a household does not segregate waste, we do not collect their waste. But in the town we can't do it. The city has to be clean by 6.00 a.m. before people come to the city to commute. Not just that, some people have a habit of disposing their mixed waste in the town areas as they know that we have to collect mixed waste in here too*" (Key Informant interviews, 2019 - SP/BUC/04?2019/06/02).

In addition to household waste, the BUC collects nearly 15 tons of industrial waste each month. These are generated by the local supermarkets (Food City/ Keels Super) and garment factories in the town area. The BUC charges LKR 2000 per ton from these companies for waste collection. Also, the BUC has to manage waste generated at two Buddhist temples, the Bellanwila Raja Maha Vihara and the Pillawa Purana Vihara. Both temples are famous Buddhist shrines in the Colombo district and attract thousands of pilgrims each day. The majority of waste generated on the compound of these two shrines is bio-degradable waste produced from different types of flowers and food. But there is also cardboard and polythene packaging thrown. The BUC does not have accurate records

on the amount of waste generated from these locations. Yet an officer of the BUC stated, "*Managing waste at these temples is a challenge. Nearly 95% of the waste is bio-degradable waste. We have requested the temple officials to devise a system to segregate the generated waste but they have failed to segregate properly. So we have to collect the mixed waste and dispose it at the Karadiyana Waste Management Center paying LKR 5000 per truck load. If they segregate the waste, we will only have to pay LKR 2500 per truck load*" (Key Informant interviews, 2019 -SP/BUC/04/2019/06/02).

5.2.2 Waste management initiatives

The Boralesgamuwa Urban Council has established a waste collection and recycling center called ''Sampath Piyasa'' (Resource Center) to collect economically viable waste such as metal, glass, plastics, polythene etc. The Western Province Solid Waste Management Authority funded the project and provided a small waste collection unit made out of tin sheets. The center is located at the Boralesgamuwa Urban Council Premises and the residents of the Urban Council can hand over economically viable waste to the center. The BUC expects to expand the waste collection unit and has allocated a sum of LKR 700,000 to build a larger unit.

"Kasala Pola" (Waste Fair) is another waste management initiative of the BUC. It is a mobile garbage market where residents can hand over economically viable waste to the BUC. The program is an initiative proposed by the Central Environmental Authority. It is a private-public partnership where informal solid waste traders working in Boralesgawuma collect economically valuable waste on behalf of the BUC. These are linked to independent informal waste workers who collect waste in the UC area. The BUC organizes the "Kasala Pola" usually at a local playground or a Buddhist shrine. Posters and banners are displayed near the venue and the BUC media unit announces the event and the venue using a vehicle and loudspeakers. The residents do not receive a payment from the informal traders for the waste they hand over; instead they receive tree saplings which can be planted in their gardens such as banana, guava, lemon, jack, teakwood, etc. The BUC organizes a garbage market every two months in one of the 10 wards of the Urban Council. An executive officer of BUC stated, "*The Kasala Pola is a success. We have also added a compost manure stall in the market so that residents can buy manure for their trees. People eagerly participate in the "Kasala Pola" as it is a different experience. We also distribute leaflets and pamphlets on solid waste management, environmental protection, home gardening etc.* (Key Informant Interviews, 2019- SEC/BUC/05/2019/04/15).

5.2.3 Workforce

The BUC employs ten truck/tractor drivers and forty waste collection workers. All the drivers are males and only three waste workers are females. The Secretary of the BUC clarified the following: "*We are more than happy to employ female waste workers. But an issue arises when they are made permanent as they request transfers to a different department as they feel ashamed to work in the roads. So we have to transfer them to another department and recruit a male worker to the waste collection team to replace them*" (Key Informant Interviews, 2019- SEC/BUC/05/2019/04/15). The waste workers are provided with free health checkups, free spectacles, dental services and worm treatment. The waste workers are recruited as laborers and are paid a basic salary of LKR 34,000. They are eligible for two days of leave per month and 20 hours of overtime payment. Mr. Upul Suranjith, the Health Education Officer stated, "*Waste workers experience many issues. They often get sick with bacterial infections, worm infections and Dengue. There are many challenges that workers have to go through. They have to step on feces and urine, even sanitary napkins used by females which are not clean. They hold them with their bare hands.*" (Key Informant Interviews, 2019- SEC/BUC/05/2019/04/15)

The waste workers of the BUC work under unfavorable conditions. The Mayor of the BUC stated, "*they work with waste and they have to endure a lot, not only flies and the stench but also complaints from the residents. They work multiple shifts a day. In addition to these, most of our waste workers are addicts. They use alcohol, Ice and other drugs. We are very concerned about their health and their families' wellbeing so when they are given their salaries, we inquire from their wives, whether they have given any money to the family. If we get to know that they spend all the money on drugs and friends, we stop releasing salary advances. We have also opened bank accounts for their children and we deduct a certain amount and credit it to children's saving accounts* (Key Informant Interviews, 2019-MY/BUC/01/2019/04/15)

The BUC has taken some measures for the wellbeing of formal waste workers which are commendable.

5.2.4 Challenges

Key informant interviews with officials revealed some challenges that the BUC faces when providing waste management services to residents. The main challenge they face is lack of funds. The BUC is one of the poorest Urban Councils in the Colombo district. Because of this, the income of the Urban Council is significantly low in comparison to the DMMC.

The BUC has three compactor machines, seven tractors and 50 waste workers. It was observed that all the tractors are old and barely operational. An official of the BUC stated,“ *We have very limited funds, we always use lease facilities to buy new vehicles and often we don't have enough money to maintain them. As the tractors carry toxic waste, storage compartments rust very quickly and start to leak. Because of this situation almost every day one of our vehicles breaks down and disrupts the waste collection process. Similarly, we need more than 65 workers to provide a satisfactory service to the residents; but we can only afford 40 waste workers. Because of this, we have double shifts for waste collection and the workers have to work twice as hard to cover the shifts. But we try to do the best we can with what we have"* (Key Informant Interviews, 2019-MY/BUC/01/2019/04/15)

Another challenge is the high cost of waste management. Waste management equipment such as lorries, trucks and tractors are expensive. The maintenance costs of the above mentioned equipment are also very high. According to an executive officer of the, Boralesgamuwa Urban Council waste disposal is expensive:

“The *Boralesgamuwa Urban Council has to pay eight hundred thousand each month for disposing waste at the Karadiyana waste management site. The Karadiyana waste management site is located in our council area. We have allowed operations at the site without creating any issues as we understand it be a necessary evil. It is our residents who suffer because of the stench, flies etc. Other councils dump large amount of waste at the site and they transport waste through the BUC area. The Maharagama UC dumps 125 tons per day, Moratuwa and Dehiwela- 150 tons, Homagama- 80 tons and Piliyandala approximately 100. We only dispose 1/3rd of their amounts. Last year I wrote a letter to the Western Province Waste Management Authority (WPSWMA) citing these issues and requested them to reduce the payment we have to bare. The Director General of (WPSWMA) Mr. Manapperuma is flexible and he reduced 20% from the total bill. Now we pay only eight hundred thousand rupees, before it was one point two million rupees. Still this is too expensive for the BUC*” (Key Informant Interviews, 2019-SEC/BUC/03/2019/04/15).

Another challenge that the BUC experiences, is the interventions of local politicians in MSWM activities. The officials stated that local politicians use their power to stop legal action been taken against offenders. According to a waste management officer of BUC,

"*We officers have tried many times to introduce a waste collection tax to the BUC. Unfortunately, when we table it at the council, the local politicians refused to implement the law. They are afraid that they will lose votes if they implement a waste tax. We advise our workers to refrain from collecting unsegregated waste. Sometimes when our workers do not collect such mixed waste bags, residents call local politicians and then they demand our workers collect them. Politicians threaten to fire them from their jobs. Because of these unnecessary interventions it is difficult for officials to implement good laws and regulations.*" (Key Informant Interviews, 2019- SUP/BUC/04/2019/05/13)

6. Alternative SWM systems in the selected municipalities

The residents in the DMMC and the BUC are dependent on the formal solid waste management activities carried out by the respective councils. This is mainly due to the lack of space available for the residents to manage their waste. The average size of a plot of land in the BUC is 10 perches (1 hectare is 395 perch). This situation is also true of the DMMC as the council area is densely populated. This lack of space has reduced the opportunity of utilizing alternative solid waste management activities at the household level. Nevertheless, there are informal solid waste workers and traders who are active in the two selected Municipal Councils.

6.1 Actors in the informal waste sector

We can identify the following actors in the informal waste chain:

1. Small scale informal waste workers - These individuals work for small scale waste traders. They are provided with a cart or a trolley to collect valuable waste items. At the end of the day, they are paid according to the value of the collected waste.
2. Small scale independent waste traders (middlemen) - These individuals employ a small number of informal waste workers to collect economically viable waste. They store the collected waste in small warehouses. Then they sell the collected waste to large scale recyclers at a profit of 2% to 3%.
3. Large scale recyclers – The large scale recyclers purchase the economically viable waste from small scale waste traders and purify the waste and make billets out of the collected waste (Metal Billets) and they export it to India and China to be used as raw material at a profit margin of 15% to 20%.

The small scale independent traders collect (and buy) waste materials that are either recyclable or reusable, such as different types of metal (iron, aluminum and copper), glass bottles, PET bottles, e-waste, and reusable paper. The prices vary from one buyer to another and also fluctuate according to the demand in local and regional markets. The items collected by them are separated in their store-rooms and are then sold to large scale recycling plants for processing. However, it is important to emphasize that the residents are not dependent on the services provided by the informal waste traders as they only collect economically valuable waste.

One of the respondents interviewed in the study owns a large scale solid waste management facility which supports waste collection activities in different municipal and urban councils, including the DMMC and BUC. Sri Lankan Airlines catering, Sampath Bank, Moratuwa Urban Council and the Dampe Urban Council are few of his clients. He stated,

"*I started off with one compactor and two drivers. Today I own three compactors, a few tipper trucks, few small tractors and thirty full time contract workers. I own a large scale composting yard in the Dampe area. The site has 6 acres and we compost kitchen waste which we get from our clients. I used to collect recyclable non-biodegradable waste but now I don't do it as the profit is less as there due to much competition*" (Key Informant Interview, 2019 , KR/DMMC/01/2019.03.24).

An owner of a small-scale informal recycling business active in the BUC area also participated in the study. He owns three small TATA trucks and five push carts to collect economically valuable waste. He explained that he offers the following services:

"I started collecting waste when I was a teenager. There were few waste traders back then so I helped one such informal trader. I collected beer cans and beer bottles from my neighborhood. Then I started my own collection center with one worker. Now ten workers work for me and I collect recyclable waste items such as glass bottles, iron, copper, aluminum, plastic items, repairable electronic items etc. From 2016 this business has become less profitable; the prices of recyclable items have decreased as China and India have decreased their imports" (Key Informant Interview, 2019, P/BUC/01/2019.03.19).

6.2 Services of the informal sector

Informal waste traders operate within a selected area. They do not travel to every ward of the council area. One such small trader explained how they select the areas as follows:

"It is not profitable for us to travel to every ward of the Urban Council. We select areas where government and private sector employees live. From these areas we can collect bottles, old computers, machines, old cycles, plastic items etc. In the Boralesgamuwa Urban Council, areas such as Papiliyana, Raththanapitiya, 10th Mile Post and Kohuwala are profitable in this regard. But once in a while we visit other wards to collect recyclable waste" (Key Informant Interview, 2019 , P/BUC/01/2019.03.19).

In these selected locations informal waste traders provide services such as buying recyclable waste, clearing attics etc. One of the informal waste traders stated following about the services they offer:

"*We buy recyclable or reusable items from the residents. For paper and newspapers we offer LKR 10 per kilogram. In addition, we pay LKR 20 per kilogram of iron, LKR 150 for a kilogram of copper, LKR 100 for a kilogram of aluminum, LKR 10 for a clear glass bottle, LKR 10 for a kilogram of coconut shells etc. Also occasionally we take orders to clean old houses, stores and land, we charge LKR 100 to clean the location and we get any recyclable material which we then sort and store at our warehouse to be sold later*" (Key Informant Interview, 2019 , P/BUC/01/2019.03.19).

Large scale waste management companies offer different services to the community. Usually they provide waste management and cleaning services to local governments and private companies. Owner of one such large scale company explained about the services his company offers in the following manner:

"*I offer different services to my clients. I rent my compactors and tipper tractors to Urban and Municipal Councils. Most of the councils do not have enough vehicles and workers to manage waste collection. Vehicles are usually rented for a period of one year or six months with the driver. The monthly payments vary from one organization to another, usually it ranges from LKR 80,000 to LKR 100,000. I have to pay the salary of the drivers and repair the vehicle when needed. In addition, I provide waste collection services to private companies. I offer these services to Sri Lankan Airlines Catering, a few private banks and hotels. We charge by the number of truck loads we collect from each location*" (Key Informant Interview, 2019, KR/DMMC/01/2019.03.24).

6.3 Relations between informal waste traders and local councils

The relations between informal waste companies and the local councils are of a mixed nature. In general, informal waste workers and traders are stigmatized and labeled as thieves or drug addicts. During the interviews with officials and politicians, the research

team explored their attitudes towards informal waste traders. Some of the officials thought of informal traders as a necessary evil. According to these officials, informal solid waste traders also carry out illegal activities such as selling and distributing drugs, stealing, pollution etc.

Other officials had a more positive attitude about informal waste workers and the services they offer. An executive official of DMMC stated,

"*The Dehiwala-Mt. Lavinia Municipal Council is appreciative of the services that are provided by informal solid waste workers to our residents and also to our council. According to our records there are 34 informal solid waste traders in the DMMC wards. They manage most of the recyclable waste generated in the DMMC……If not for them, the DMMC would have to spend additional funds to manage recyclable waste. When we think about the salaries, vehicle maintenance and fuel costs, they are actually saving millions for us each month*" (Key Informant Interview, 2019, DC/DMMC/01/2019.04.02).

An elected member of the DMMC stated, "*As a committee we recognize and value the services offered by informal workers. They manage almost all of the recyclable waste. To be honest we can't even think of providing services of the same level. They have a wide service network, a good fleet of vehicles to collect waste, they pay the residents and buy their waste. They are very versatile. If they stop waste collection, not just the DMMC, but all the councils will face a huge issue. Since we don't have recycling facilities we will have to make large payments to Karadiyana and other dumping sites*" (Key Informant Interview, 2019, PS/DMMC/05/2019.02.09).

However, some other respondents had a negative attitude towards informal solid waste managers. An officer of BUC mentioned that the harm done by informal solid waste workers was greater than the service they provided. He elaborated,

"*The informal waste workers have their own agenda. They will do anything to make a profit. Sometimes, informal waste workers charge LKR 100 – 200 and collect mixed waste from households. They then dump the mixed waste bags in the town area since they know that we have to collect any type of waste to clean the town area. This is a huge issue for us as we have to pay LKR 5000 to the Kardiyana Dumping site to dump a truck full of mixed waste."* (Key Informant Interview, 2019 , US/BUC/05/2019.06.03).

An executive officer of DMMC also had a negative attitude towards informal solid waste workers. This is depicted in the following statement made by him:

"*They do more harm than good. They do not properly store collected waste items. Especially they do not properly store metal items, acids, expired batteries, etc. We have seen many cases where these items have exploded injuring people, children, and leakage from acid batteries has polluted canals, rivers and waterways. Also, when incorrectly stored, recyclable items react with other items and produce toxic gases and chemicals. We get at least one complaint a week about informal waste traders*" (Key Informant Interview, 2019, JY/DMMC/06/2019.05.07).

The research team has observed that some of the allegations made against informal solid waste traders are true. Most of the informal waste traders do not store waste in a safe manner. In some locations batteries and chemicals were leaking into the ground and waterways. In addition, we observed that plastic items were being melted without appropriate safety measures. Residents living near waste traders' houses complained about the unhygienic conditions of the recycling center.

In another interview, the second author interviewed the owner of a large scale waste and recycling company active in the DMMC area. The owner had carried out waste collection activities for nearly 20 years and employs nearly 30 waste traders. Later, it was revealed from a reliable source that the businessman is a well-known drug dealer of the DMMC and he uses his employees to distribute drugs. Nevertheless, there is no evidence to state that all waste traders engage in illegal activities.

Despite these negative perceptions, LAs have understood the significance of informal waste workers in managing Municipal Solid Waste. Hence, the DMMC and the BUC are attempting to build good relations with the owners of the informal management companies The DMMC has started to register all informal waste workers active in their area and are devising a plan to allocate a ward to each waste collector to collect recyclable waste. The BUC is already working with informal traders in their "Kasala Pola" programme and is planning to increase the contribution of informal waste traders in waste management. However, it was later revealed that informal waste traders have mixed feelings about working with the councils and formalization. This is further discussed in the following section.

6.4 Challenges to informal waste workers

Informal waste workers and traders face different challenges while carrying out waste collection activities. These challenges are market fluctuations, social stigma, lack of support from the local councils and illegal demands from officials.

The market for recycled metal such as iron, copper and aluminum has reduced since last year. This was a direct result of a decision made by the government of Sri Lanka in the year 2019 to import iron billets from India. With this decision, the demand for locally recycled iron reduced immensely. An owner of an informal waste and recycling company in Rathmalana said,

"*Now the market value has reduced so much where I can barely pay salaries. Not only metal; the market for plastic has also gone down as China stopped buying polythene and plastics in 2018. The government should think about us before taking decisions to import metals and plastics because we are saving so much of money for the country*" (Key Informant Interview, 2019 , RRGD/DMMC/03/2019.04.11).

Another waste collector who also works as a waste collector in his own small business in the Boralesgamuwa Urban Council area stated the following:

"*If the government can impose a standard price for each item it will help us a lot. Large scale recyclers such as K.S Enterprises and RAM Brothers decide the prices of each item we collect. We have a small profit margin, usually LKR 2 -5 from each kilogram but I know very well that from papers alone large-scale recyclers make about LKR 300 from each kilogram. This is a mafia. Someone should do something about this*" (Key Informant Interview, 2019, P/BUC/06/2019.02.11).

The social stigma associated with informal waste workers is another challenge. The informal waste traders are labeled as junkies and thieves. Because of this attitude, informal waste workers experience verbal abuse and sometimes physical abuse in the hands of residents, the police and municipal employees. A small-scale informal waste trader stated, *"You must have noticed that all my workers are really old. It is difficult to find young people to collect waste as they do not like to be known as a 'Bothal-Paththarakaraya' - one who collects bottles and newspapers for a living"* (a derogatory term used to define informal waste collector). *In general, people call waste workers by this name. If I can get younger workers, I can provide a better service. Collecting waste is not an easy thing as you have to push the cart for hours and at least for ten to twenty kilometers. Because of this, at the end of the day, waste workers consume alcohol. However, people see every waste collector as a drug addict or an alcohol addict"* (Key Informant Interview, 2020, SJ/DMMC/05/2020.02.08).

He further said, "*I am sure that all my waste workers have faced verbal abuse at least once in the past month. Some people threaten to beat up waste workers if they come to their neighborhood. If a theft takes place in an area we collect waste, the police always asks my workers to give a statement. Even though you say that we offer a service to the society, I don't think people understand that*" (Key Informant Interview, 2020, SJ/DMMC/05/2020.02.08).

According to the informal waste traders, the local council and the central government do not provide adequate support for them. Some owners of the informal waste management companies had offered their expertise and services to the councils free of charge hoping to support municipal waste management services, but the councils had ignored these gestures. One of them told us,

"*I think the Municipal Councils still do not identify our services as a resource. I have offered my services and technology to Municipal Councils but none of the officials or the politicians came forward to help me. I am an expert in industrial compost production. I have a large scale compost yard and have machinery that can convert kitchen waste to compost in a day. I offered to install and operate one such machine free of charge in a government land to generate compost on a daily basis. I requested for a 600 m^2 land and a three phase connection. But no one from the …… council responded to my request*" (Key Informant Interview, 2020, KR/DMMC/03/2019.04.18).

The owners of informal waste companies also mentioned that the lack of guidance and involvement of the local councils and the central government was a part of the challenge. One such owner stated,

"*The councils and the central government should inspect and guide the activities of informal waste workers. The local councils can resolve most of the issues in the industry such as lack of safety measures, unhygienic storage and management of waste and reduce illegal activities etc. If the government takes regulatory measures, this industry will finally gain the recognition it deserves. Such measures will also open up more opportunities for informal waste workers to obtain financial support from banks and financial institutions*" (Key Informant Interview, 2020, KR/DMMC/03/2019.04.18).

The owners of the informal waste management companies have realized the importance of government recognition to further develop their businesses. The central government and the local councils can also benefit from formally recognizing and regulating the industry

and use the support of the informal waste traders to manage MSW more efficiently and cost-effectively.

Another challenge the owners of informal waste management companies face is the illegal demands made by politicians and officials attempting to obtain services from the councils. Illustrating this, an owner of the informal waste collection company stated,

"*Some officials and politicians make illegal demands from us such as requesting financial favors. Once I went to a Municipal Council to renew my service license. An elected politician asked me to make a twenty thousand rupees donation to his foundation. I ultimately had to make the donation to renew my license"* (Key Informant Interview, March 2019).

Another informal waste trader stated the following:

"*I provide rental vehicles to municipal councils to collect and transport municipal solid waste. Once when a tender was called for a Tipper truck I applied for it. After a week or so, I got a call from a politician of the local council and he asked me to meet him at the council on a Friday. When I met him he told me that they think my bid is the most suitable but they wanted me to add an additional LKR 200,000 to my tender bid in order to select it. When questioned as to why this has to be done, he simply replied: 'My family also has to survive, not only yours.'* He further said, *when we make the payment you should return the additional LKR 200,000 to me, I had to do this to get the tender*" (Key Informant Interview, 2020, KR/DMMC/03/2019.04.18).

7. Conclusions

The above sections discussed municipal solid waste management activities in Sri Lanka with special reference to the activities of the Boralesgamuwa Urban Council and the Dehiwala-Mt. Lavinia Municipal Council. The findings of the study revealed the existing MSWM infrastructure to be a mechanism where the local councils have to manage the municipal waste with the support of many other actors including the central government agencies, politicians and bilateral donors. Moreover, this system has a linear waste flow. In both municipalities, the MSWM chain is linear. It is compulsory for the central government and the local councils to concentrate on increasing the efficiency of existing waste management activities and gradually transform waste management to a circular waste chain. The central government agencies and the local councils have given great significance to the introduction of technology and increasing funds. However, greater attention should be paid to identifying and using the available resources and technology efficiently. One such step could be improving the contribution of the public to waste management activities by introducing communal or neighborhood waste disposal units and organizing more mobile recycling markets, such as under the Kasala Pola project in Boralesgawuma. Such a measure would significantly reduce the funds currently spent on door to door waste collection.

The MSWM discourse in Sri Lanka is an “out of sight - out of mind” discourse. Since the time of the British colonizers, waste management practices have focused on hiding municipal waste from sight. This practice continued in post independent Sri Lanka leading to a large accumulation of waste mountains throughout the country. This led to waste generation being identified as an environmental issue in the late 1970s and early 1980s. The central government obtained the support of international agencies such as JICA and KOICA to resolve this environmental issue which led to the transfer of Japanese and Korean waste management technologies to Sri Lanka. In the late 2000s, urban beautification was added to the waste management discourse in Sri Lanka under the leadership of the Secretary of Defense. This led to urban waste landfills being moved to rural areas and an environmental police unit being introduced to regulate unlawful disposing of waste. This was a continuation of the “out of sight-out of mind” discourse. With the government change in the year 2015, waste was again defined as an environmental issue and the central government agencies explored eco-friendly waste management practices such as banning non-recyclable polythene, composting, energy generation from

waste incineration etc. In the year 2019, the former Secretary of Defense, Mr. Gotabaya Rajapaksa was elected as the President of Sri Lanka. He reestablished the environmental police unit and urban beautification activities, moving urban dumping sites to rural areas such as Aruwakkaru. Assumably, the “out of sight- out of mind” discourse of MSWM will continue in his term as the president of the country.

The Dehiwala–Mt. Lavinia Municipal Council and the Boralesgamuwa Urban Council are spending substantial funds to manage Municipal Solid Waste within their territories. Both councils dispose all biodegradable waste and most of the non-biodegradable waste to the Karadiyana Waste Management Center. The small-scale informal waste collection companies manage recyclable non-biodegradable waste and municipal councils are now attempting to establish recycling centers to manage non-biodegradable waste. However, the informal waste traders believe that the municipal councils will not be able to successfully implement these plans due to reasons such as political interventions, inefficient and lethargic administrative staff, lack of facilities and the inflexible financial policy of the municipal councils. The MSWM mechanism of the councils is highly politicized. This has contributed to inhibiting and delaying the introduction of progressive waste management regulations such as collecting a waste tax or fees from residents. The municipal councils face challenges such as lack of funds, high costs for waste management etc. Moreover, the situation of the municipal waste workers has improved since they are permanent staff members and are being paid a good salary. Yet, workers are overworked as they have to work multiple shifts a day mostly under unsanitary conditions. The local government has to implement measures to reduce the workload of the municipal waste workers and provide better sanitary facilities.

Informal waste traders play a major role in the management of non-biodegradable waste. They employ waste workers and provide them with lorries, carts and trollies to collect recyclable waste from households, streets and industrial areas. In addition, the municipal waste workers of the DMMC and the BUC sell the recyclable waste they collect by visiting the waste collection centers of the informal waste traders. The informal waste traders then sell the collected economically viable waste to large scale recyclers or exporters. However, there is social stigma attached to informal waste workers and traders; they are often labeled as thieves and drug addicts. It would be recommendable if the central government and the local councils take action to appreciate the services that informal waste workers offer to the public. Some local councils have taken first steps towards the formalization of

the informal waste sector by registering waste traders and incorporating them into waste management programs. Informal waste businesses face challenges such as market fluctuations, lack of support from the local councils, social stigma and illegal demands of local politicians and officials.

This working paper has made an attempt to construct an accurate and comprehensive picture of the existing Municipal Solid Waste Management mechanism of Sri Lanka. The authors hope that the paper will contribute to further improving the existing waste management mechanisms and be useful to experts, practitioners and policy makers to develop more effective and efficient municipal waste management practices.

References

Batuwitage, P. (2004). Municipal Solid Waste– Challenges and Opportunities. *Ministry of Environmental and natural Resources,"Sampathpaya", Battaramulla, Sri Lanka*.

Colombo Municipal Council, 1939, *February. Seasonal Paper 1, Administration report of the Commissioner of the Municipal Council of Colombo for the year 1942*. Colombo Municipal Council.

Colombo Municipal Council, 1940, February. Seasonal Paper 1, Administration report of the Commissioner of the Municipal Council of Colombo for the year*1940*. Colombo Municipal Council.

Colombo Municipal Council, 1960, February. *Seasonal Paper II, Administration report of the Commissioner of the Municipal Council of Colombo for the year 1960*. Colombo Municipal Council.

Colombo Municipal Council, 1962, February. Seasonal Paper 1, Administration report of the Commissioner of the Municipal Council of Colombo for the year *1962*. Colombo Municipal Council.

Cornea, N.L., Véron, R. and Zimmer, A., 2017. Everyday governance and urban environments: Towards a more interdisciplinary urban political ecology. *Geography Compass*, 11(4): e12310.

Cristiano, J.L., 2013. Los escritos de Alfred Schütz desde la perspectiva de una teoría de la creatividad de la acción. *universitas humanística*, *75*(75).

Daechsel, M., 2004. Nobodies to Somebodies–The Rise of the Colonial Bourgeoisie in Sri Lanka. By Kumari Jayawardena. pp. 416. London, Zed Books, 2003. *Journal of the Royal Asiatic Society*, *14*(2), pp.153-155.

Ghertner, D. A. (2008). Analysis of new legal discourse behind Delhi's slum demolitions. *Economic and Political Weekly*, 57-66.

Ghertner, D.A., 2008. Analysis of new legal discourse behind Delhi's slum demolitions. *Economic and political weekly*, pp.57-66.

JICA, 2020 "JAICA - Sri Lanka", JICA, Retrieved on 10th June 2020

https://www.jica.go.jp/srilanka/english/office/index.html

KS, B., 1994. L'archéologie du savoir Paris: Gallimard, 1969.(The Archaeology o, Knowledge, trans. A. Sheridan. New York: Pantheon, 1972. Also in. *The Cambridge Companion to Foucault*, p.321.

KOICA ,2020 " KOICA in Sri Lanka' KOICA, Retrieved on 10th June 2020

http://www.koica.go.kr/lka_en/3914/subview.do

Kuruppuge, R., & Karunarathna, A. (2014). Issues in Management of Municipal Solid Waste: Institutional Capacity of Local Authorities in Sri Lanka. In *Waste Management & Resource Utilisation*. Hydrabad. Retrieved from https://www.researchgate.net/publication/265737032_Issues_in_Management_of_Municipal_Solid_Waste_Institutional_Capacity_of_Local_Authorities_in_Sri_Lanka

Landstrom, I. (2006). *Towards Collaborative Coastal Management in Sri Lanka?: A study of Special Area Management planning in Sri Lanka's coastal region* (Doctoral dissertation, Kulturgeografiska institutionen).

Metzidakis, S., 2000. Barthesian discourse: Having your cake and eating it too. *Romanic Review*, *91*(3), p.335.

Municipal Council Act 1947. (SL).

Nuisance Ordinance 1862 *(*Cth) s. 15. (SL.).

Owens, K., & Zimmerman, C. (2013). Local Governance Versus Centralization: C onnecticut Wetlands Governance as a Model. *Review of Policy Research*, *30*(6), 629-656.

Pradeshiya Saba Act, No. 15 1987 (Cth.) s. 41,93, 95. (SL.).

Provincial Councils Act 1987 *(*Cth.) s. 129,130,131. (SL.).

Ruiz, J.R., 2009, May. Sociological discourse analysis: Methods and logic. In *Forum qualitative sozialforschung/Forum: Qualitative social research* (Vol. 10, No. 2).

Spannagel, C., Gläser-Zikuda, M. and Schroeder, U., 2005, May. Application of qualitative content analysis in user-program interaction research. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 6, No. 2).

*The National Environmental Act***,** *No. 47* 1980 s. 41,93, 95. (SL.).

Urban Council Act 1939 (SL.).

Urban Councils Ordinance, No. 61 1989 (Cth) s. 119,120,121. (SL.).

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