

বাংলাদেশ
মুদ্রণ জয়ন্তী
Bangladesh



Waste Report



2019-20

**DHAKA
NORTH CITY CORPORATION**

WASTE MANAGEMENT DEPARTMENT

CONTENTS

MESSAGE FROM HONORABLE MAYOR	i
MESSAGE FROM CHIEF EXECUTIVE OFFICER	ii
MESSAGE FROM CHIEF WASTE MANAGEMENT OFFICER	iii
FOREWORD BY CHIEF EXECUTIVE OFFICER	iv
ACRONYMS	vii
WASTE FACTS	viii
AREA MAP OF DHAKA NORTH CITY CORPORATION	ix
1. OVERVIEW OF SOLID WASTE MANAGEMENT	1
1.1 Function of Waste Management Department	1
1.2 Regulatory Framework on SWM	2
1.3 Per Capita Waste Generation	2
1.4 Expenditures Related to SWM	3
2. POPULATION TRENDS	5
3. WASTE COLLECTION	7
3.1 Primary Waste Collection	7
3.2 Secondary Waste Collection	8
3.3 Street Sweeping	11
3.4 Drain cleaning activities	11
4. WORKSHOP OF WASTE MANAGEMENT DEPARTMENT	12
5. FINAL DISPOSAL SITE	13
6. WARD-BASED APPROACH IN WASTE MANAGEMENT	18
7. MUJIB-YEAR ACTIVITIES OF WMD	21
8. QURBANI WASTE MANAGEMENT	22
9. PR Activities of WMD	23
10. ACTIVITIES INITIATIVES DURING THE COVID-19 PANDEMIC	24
11. COVID-19 CRISIS RESPONSE from DONORS & LOCAL AGENCIES	28
12. EXPERIENCE GATHERING OF WMD OFFICIALS	31

MESSAGE FROM HONORABLE MAYOR



MD. ATIQUL ISLAM

Mayor

Dhaka North City Corporation

Waste management is an alarming aspect for all the citizen as it determines the safeguard of the environment and human health. City dwellers has the right to update himself on the overall situation of waste management. Similarly, the Dhaka North City Corporation (DNCC) should also keep informing the public on it.

In addition, the Waste Management Department (WMD) should carry out analysis on the overall activities for subsequent improvement. This can be done by accurate reporting, and the waste report is the academic and professional approach to disclose information on the City Corporation's waste management practices.

DNCC handles about one million tons of solid waste annually with its existing resources. It remains a challenge for DNCC because of population dynamism and multiple sources of

waste generation. DNCC focuses on the municipal solid waste management through collection, transportation and dumping facilities in compliance with health codes and environmental regulations. All-out efforts, at times goes beyond our capacity to keep it within control because the challenges are diverse. The WMD is always dynamic in progressing to modern management to keep the activities in our grip.

The WMD is continuously adding endeavor to provide the best services, and we are now upgrading from traditional management to modern management by digitalization with the support of local experts and foreign donors like JICA. By value addition to the services, we are committed to the citizen of DNCC to provide sustainable, livable and Clean Dhaka City. I hope with the positive support of the citizen, we can work together and achieve our goal.

MESSAGE FROM CHIEF EXECUTIVE OFFICER



MD. SELIM REZA
Chief Executive Officer
Dhaka North City Corporation

Waste management is an issue related to environmental, technical, cultural, and socio-economical aspects, and it needs multidimensional approach for better management and providing pleasant environment to the citizen. DNCC has been entrusted to manage the solid waste in one of the most densely populated cities in the world.

DNCC has been preparing and publishing a waste report annually since 2016 with the aim to educate the citizens about the current situation on waste management in Dhaka North, and the efforts made by DNCC in managing them.

Effectiveness of solid waste management reflects the overall standard of the services provided to the citizen. DNCC bears the historical continuation of heritage, culture, diversity of

people. The WMD could correctly identify the diversified issues, and over the years putting its best effort to address them.

Providing the services to the public is a never-ending effort. We, DNCC, are compelled to keep our activities more transparent and accountable to the citizen. Transparency and accountability can only be effective with efficient reporting, and the waste report would bear the testimony to serve the purpose. The report has been compiled comprehensibly and would reflect the waste management activities and future endeavor of DNCC.

DNCC is committed to present 'Clean Dhaka' to its citizen and the waste report would help us assessing our activities and finding ways to achieve the mayor's vision.

MESSAGE FROM CHIEF WASTE MANAGEMENT OFFICER



Commodore M Saidur Rahman, BN
Chief Waste Management Officer
Dhaka North City Corporation

The waste report reflects activities related to waste management of the City Corporation. DNCC has started the waste report preparation since 2016 with the intent to give some preliminary idea to the public regarding the management of waste in DNCC.

Over the years, the rapid development of the country has improved the living standard of Dhaka City, resulting in increased rate of per capita waste generation. This augmented trend of total waste generation in the city, and DNCC faces continual challenges in managing waste. The rapid urbanization of Dhaka City mostly affects in the DNCC area resulting in multifarious difficulties in the waste management system.

Moreover, newly included area which consists 18 wards will require additional effort for sound disposal of the increased waste in the coming years. The organizational structure of WMD

indicates a challenging job for DNCC to bring this issue under manageable condition.

Furthermore, the WMD is also making efforts on the management of other categories of wastes such as medical waste, electronic waste, industrial waste, and construction waste. The medical waste being hazardous to public health has been monitored to bring under control. At present, DNCC lacks the resources to manage all the categories of the waste. However, WMD is continuously analyzing and putting effort to keep it under control.

We, WMD has started our annual waste report, hoping that the public can appreciate the waste situation and related issues, recognize the effort of DNCC to manage those effectively through the report, and participate the waste management to achieve 'Clean Dhaka' together with us.

FOREWORD BY CHIEF EXECUTIVE OFFICER

Waste is not waste, rather than it's an asset if we can manage it properly. This asset can utilize as raw materials of organic fertilizer, power, and industrial products. By recycling and reducing discarded materials or waste duly we can keep the environment clean and environment friendly. Urbanization, industrialization and modernization have widely introduced the term "waste" as a concerning issue. Waste is any discarded materials produced by natural disasters, human activities of domestic chores, agriculture, business, industry, medical services, man-made disasters etc. According to Bangladesh Environment Conservation Act, 1995, 'Waste' is, "any solid, liquid, gaseous, radioactive substance, the release, disposal, and throwing away of which may cause deleterious changes to the environment." Advancement of modern technology creates the opportunity of producing more waste. A proper and up-to-date waste management system can uphold the urbanization and industrialization.

As waste is inevitable in human life, waste management is the only key to keep our environment clean and livable. Waste management (or waste disposal) includes the activities and actions required to manage waste from its

inception to its final disposal (UN Statistics Division-Environmental Statistics, 2017). This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation. It also encompasses the legal and regulatory framework that relates to waste management. Waste management aims at reducing adverse effects of waste on human health, the environment, planetary resources and aesthetics.

Waste management is one of the major concerns of all over the world to protect environment. There is a correlation between waste generation and economic status and lifestyle habits of a country. It is estimated that the world generates approximately 7 – 10 billion tons of solid wastes annually as world population grows and economic prosperity widens. Of this, 2.01 billion tons is municipal solid waste (Global Waste Management Conference 2021). Waste management practices varies from country to country. The nature of waste management differ from developed to developing nations and regions (urban or rural areas) according to culture, standard of living and economic capability; even residential and industrial areas can take



different approaches as per specific necessity. Waste management measures are also different regarding types of waste such as: solid or liquid waste; domestic, industrial or medical waste; biodegradable or non-biodegradable waste; etc.

With the onset of rapid growing industrialization waste management becomes an alarming issue in Bangladesh. Early waste management system in Bangladesh allowed indiscriminate open dumping and burning, disposal of wastes into water bodies, land filling, and direct disposal into agricultural land. With the advent of time, the country shifted its waste management system from traditional to a modern approach. Bangladesh began recycling and composting of organic wastes in 1980 and 1990. Sanitary landfill with gas recovery of the residual wastes began in 2010. Bangladesh has taken National 3R strategy for Waste Management, 2010 where 3R refers to Reduce, Reuse, and Recycle.

Effective management of waste is important for building sustainable and livable cities, but it is relatively expensive, usually comprising 20%–50% of municipal budgets (Solid Waste Management, World Bank, 2020). So, adequate financing is often unaffordable in cities of de-

veloping countries like Bangladesh. The solid waste generation in urban areas of Bangladesh amounts to around 25,000 tons per day, which translates into 170 kg per capita per year, Dhaka city alone produces one-quarter of all these (The Daily Star). By 2025 the urban solid waste generation of Bangladesh is projected to be 47 thousand tons in each day (The Financial Express). Advanced waste management is challenging in urban areas of Bangladesh due to lack of financial ability and other resources like land area, expert personnel, adaptable technology etc.

Dhaka North City Corporation is considered as the role model among 12 city corporations of Bangladesh with immense opportunities, but here also waste management is the most onerous task. In Dhaka North City Corporation rate of waste generation is 0.56 kg/capita/day. It is very strenuous to manage almost 3500 tons of waste daily. In past waste used to be collected in open vehicles and dumped in road side open places for secondary transfer to Aminbazar Landfill. With the time pace waste management of DNCC has been modernized; at present almost 70% of waste is collected with compactor, container carrier and arm roller. Instead of open dumping station 52 Secondary Transfer Stations (STs) are in operation for



proper waste management through the corporation area. Aminbazar Landfill is being updated with heavy equipment. With a view to implement 3R policy in long run DNCC organizes campaign programs. Moreover, DNCC is now focusing on cleaning of drainage and canal networks for a waterlog free city with aesthetic environment.

Higher waste generation rate is an indication of development. America produces 2.2 kg waste/capita/day (www.statista.com) whereas Bangladesh produces only 0.41 kg/capita/day (Bangladesh Journals Online). In developing

countries like ours lesser amount of waste makes burden whereas with better management practices developed countries have made huge amount waste as source of resources. Following the path of development DNCC is also taking initiatives for converting waste to resource. Incineration, waste to energy (WtE), resource recovery station for waste are the modern concepts to be implemented in near future. However, waste management and waste minimization is not the sole responsibility of the authorities, rather all stakeholders including city dwellers should work together to manage waste efficiently.



ACRONYMS

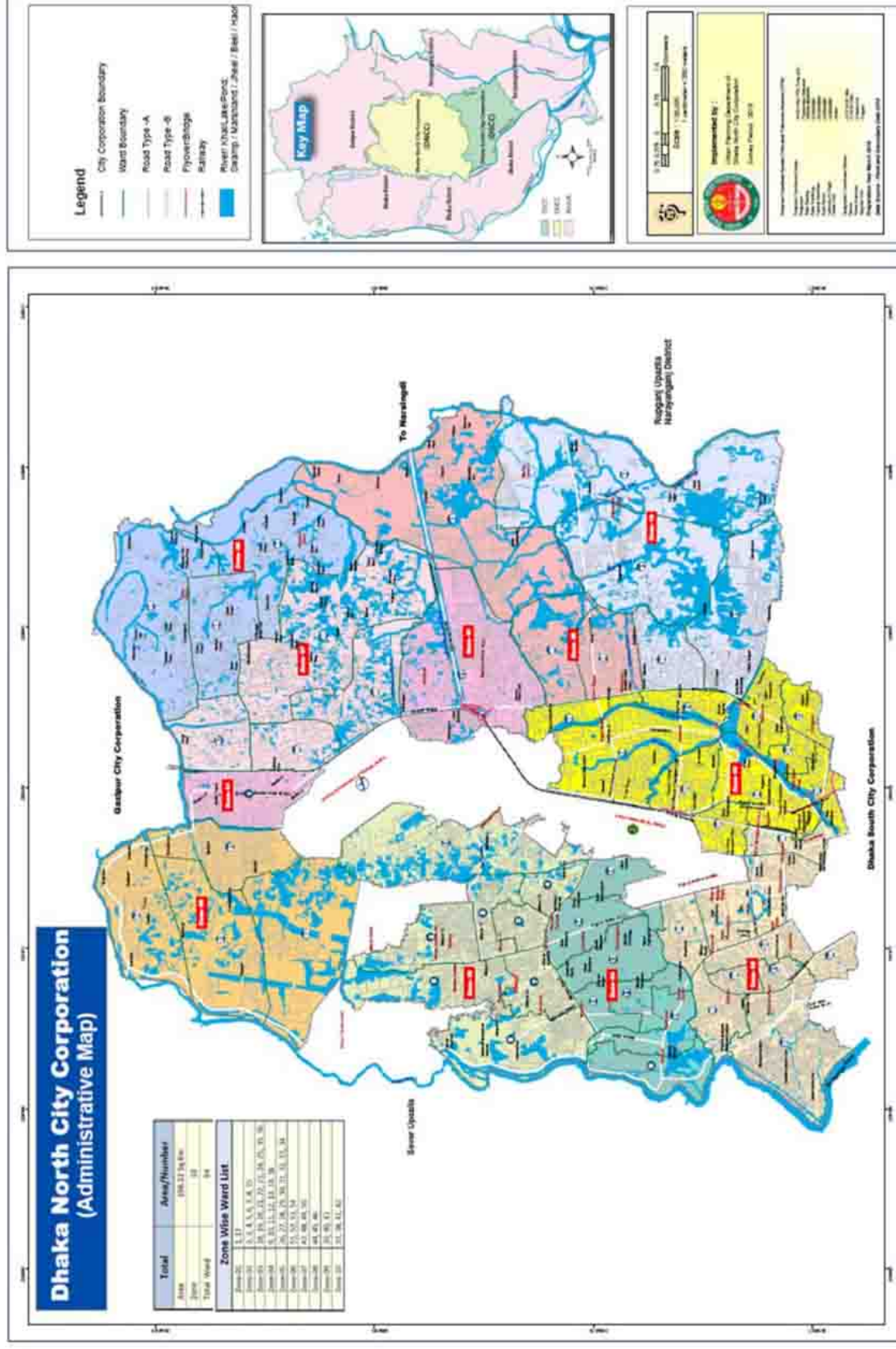
ACWMO	:	Assistant Chief Waste Management Officer
Add. CWMO	:	Additional Chief Waste Management Officer
BDT	:	Bangladesh Taka
BOD	:	Bio-chemical Oxygen Demand
CC	:	City Corporation
CI	:	Conservancy Inspector
CO	:	Conservancy Officer
COD	:	Chemical Oxygen Demand
CWMO	:	Chief Waste Management Officer
DCWMO	:	Deputy Chief Waste Management Officer
DNCC	:	Dhaka North City Corporation
DoE	:	Department of Environment
ED	:	Engineering Department
EE	:	Executive Engineer
FY	:	Fiscal Year
GoB	:	Government of Bangladesh
HQ	:	Headquarter
JICA	:	Japan International Cooperation Agency
JPT	:	JICA Project Team
LFS	:	Landfill Site
LGD	:	Local Government Division
MSW	:	Municipal Solid Waste
NGO	:	Non-Governmental Organization
OHSE	:	Occupational Health, Safety and Environment
PCSP	:	Primary Collection Service Provider
PPE	:	Personal Protective Equipment
PR	:	Public Relation
SCP	:	Secondary Collection Point
SE	:	Superintendent Engineer
SPD	:	Store and Purchase Department
STS	:	Secondary Transfer Station
SWM	:	Solid Waste Management
TD	:	Transport Department
TSS	:	Total Suspended Solid
UNDP	:	United Nations Development Programme
WBA	:	Ward-Based Approach
WMD	:	Waste Management Department

WASTE FACTS

Total Area		196.23 sq. km
Population		6.1 million ¹
Average Population density		31,488 per sq. km
Total Number of Zone		10
Total Number of Ward		54
Amount of Waste Generation		3,433 ton/day
Waste Collection	Total amount in FY 2019-20	1,002,561 ton
	Percentage	80%*
Total Number of Trips		2,08,808 nos.
Waste Collection	Highest in a month	1,00,630 ton (August 2019)
	Lowest in a month	60,710 ton (April 2020)
SWM Cleaners	DNCC cleaners	2,479 nos.
	Private company cleaners	1,435 nos.
Number of Sanitary Landfill		One (Aminbazar landfill site)
Load Per Trip		4.8 ton/trip
Waste Generation During Eid-ul-Adha		12,700 ton
Number of Waste Collection Vehicles & Heavy Equipment		Waste collection vehicle: 147 Heavy equipment: 16
Average Waste Disposal in Landfill		2,750 ton/day
Landfill Operation Cost		244.41 BDT/ton

* Mostly uncollected from drain and newly extended area.

AREA MAP OF DHAKA NORTH CITY CORPORATION



1. OVERVIEW OF SOLID WASTE MANAGEMENT

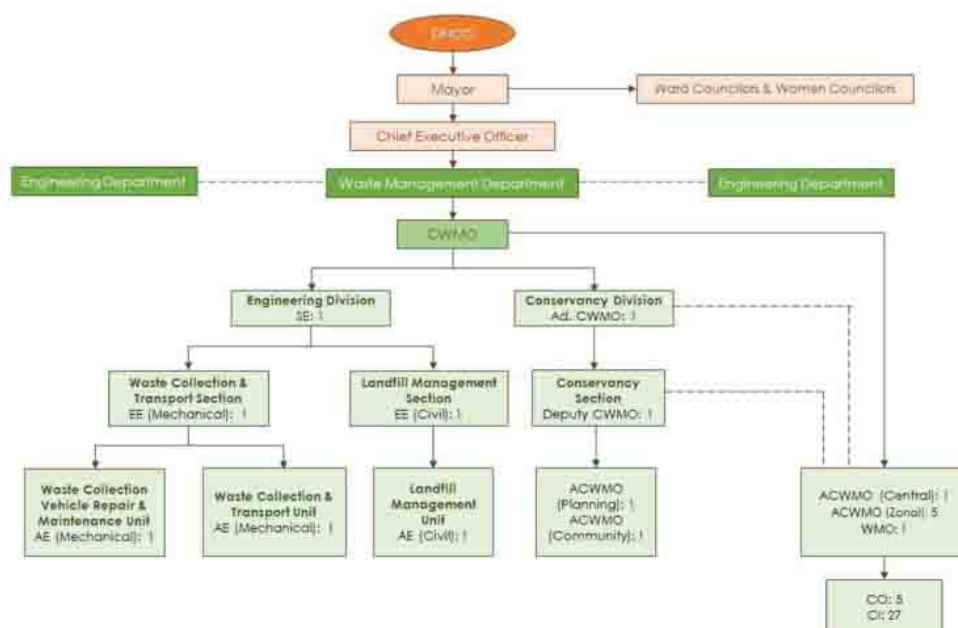
1.1 Function of Waste Management Department

The waste generated within DNCC encompasses several types such as municipal solid waste (MSW), electronic waste, hazardous medical waste, food waste, construction waste, and industrial hazardous waste. DNCC waste management function is mainly focused on MSW. Composition of MSW that DNCC deals with includes 'anything' that people throw into DNCC's waste bins and collection points. Waste Management Department (WMD) in DNCC covers the following areas:

- ◇ Regular street sweeping and drain cleaning;
- ◇ Monitoring of primary waste collection activities by the private companies and primary collection service Providers (PCSPs);
- ◇ Transportation of waste from the secondary transfer station (STS) to the landfill site;
- ◇ Construction, operation and maintenance of waste management infrastructures, i.e., ward office, STS, workshop, landfill components etc.;
- ◇ Procurement and maintenance of waste

- collection vehicles and landfill equipment;
- ◇ Operation and maintenance of Aminbazar landfill site with protection of environment;
- ◇ Promoting occupational health and safety of cleaners;
- ◇ Public awareness campaigning about proper waste management;
- ◇ Capacity building of the WMD officials through national and international training, seminar, workshop, site visit etc.;
- ◇ Planning of waste management activities and budgeting; and
- ◇ Monitoring of medical waste management.

The WMD has been successfully managing around 3,000 tons of waste per day in close coordination with other departments, including the Transport Department (TD), Engineering Department (ED) and Store and Purchase Department (SPD). In general, the Engineering Division of the WMD is responsible for the mechanization of the waste collection and transportation system. On the other hand, Conservancy Division is responsible for street and drain cleaning and monitoring the primary col-



Existing Organogram of DNCC Waste Management Department

lection system. The collection and transport vehicles are repaired and maintained by the Mechanical Department. The TD is responsible for vehicle operation, and the SPD is for the procurement of the small cleaning tools such as brooms, shovels, spades etc.

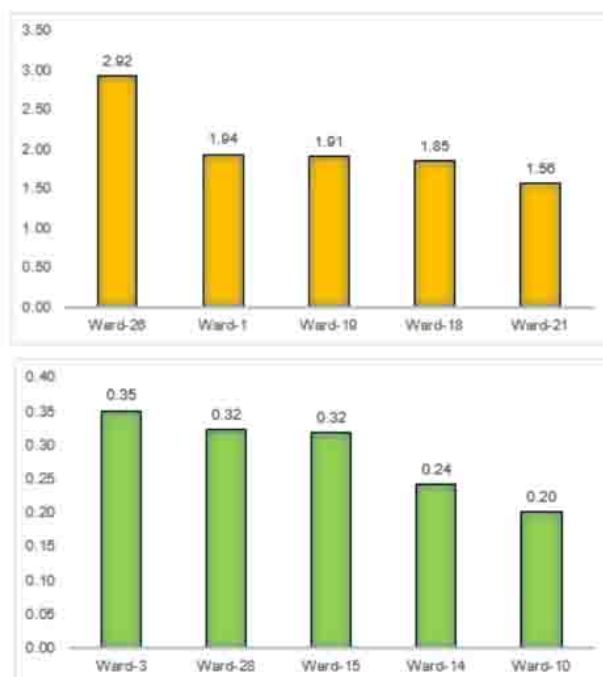
1.2 Regulatory Framework

The Government of Bangladesh (GoB) has formulated various regulatory documents such as policies, acts, rules and strategies related to waste management, as shown in the table below. Draft Solid Waste Management Rules 2018 has been formulated as a fundamental law of waste management and is currently in the process of endorsement. Waste management-related laws define the responsibility of SWM regarding waste collection and transport in addition to waste treatment and disposal. Despite that the regulation appoints the central government agencies as a supervising authority, City Corporations are often involved in its supervision.

1.3 Per Capita Waste Generation

The amount of waste generated within DNCC is increasing year by year due to increased number of infrastructure developments, shopping complexes, restaurants, markets, bazars along with roadside tea-stalls, floating vendors and flower markets on the footpath.

Per capita waste generation varies from ward to ward due to the economic status and life-style pattern. People in Ward-26 (Kawran Bazar area) have been generating much more waste compared to other wards and the daily waste generation per capita is 2.92 kg. The daily waste generation in Ward-1 (Uttara), Ward-19 (Gulshan area), Ward-18, and Ward-21 (Niketon area) is found to be higher than the other wards. Whereas Ward-10, Ward-14, Ward-15, Ward-28, and Ward-3 are the lowest.



Top 5 highest (top) & lowest (down) kg per capita per day waste generating wards

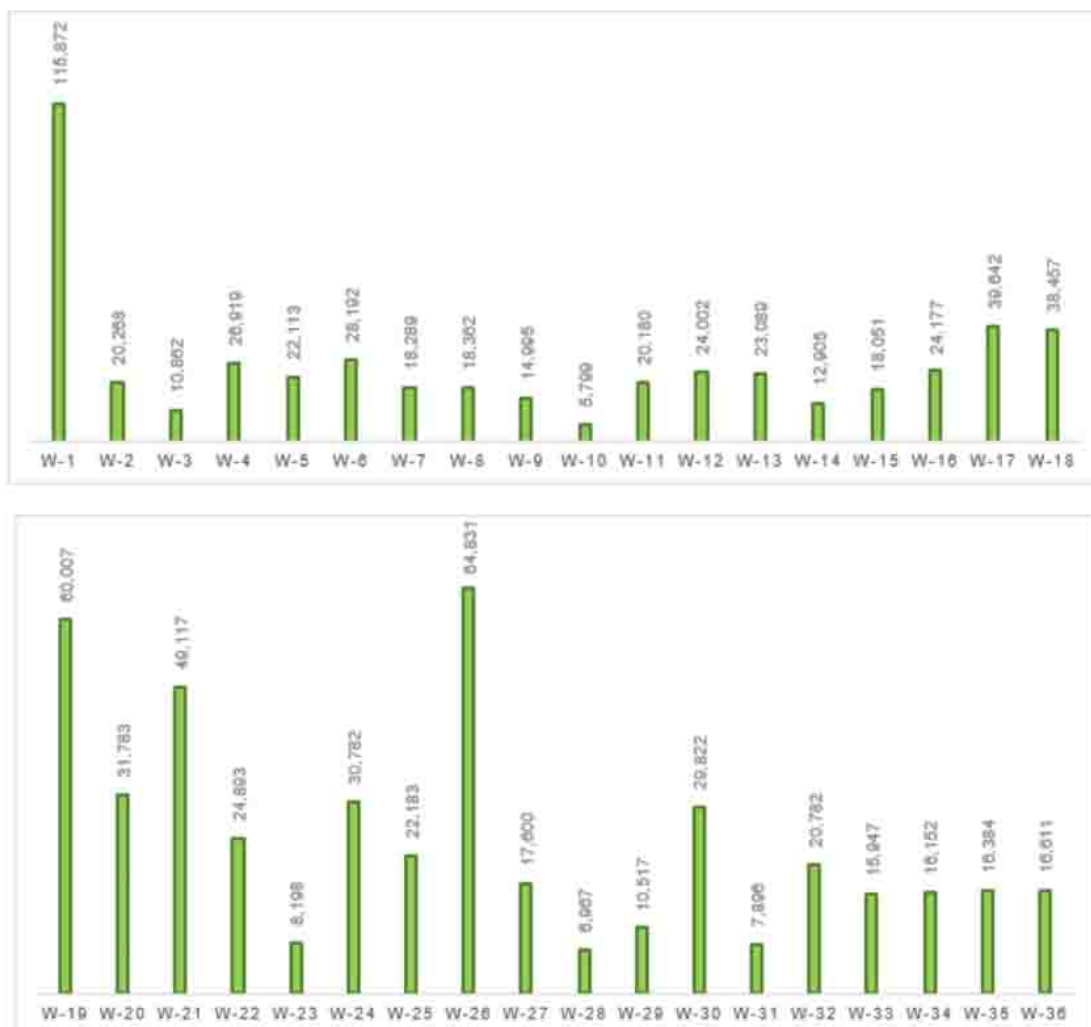
Regulatory Documents related to Solid Waste Management

Title/Contents	Year	Organization
Bangladesh Environment Conservation Act 1995, amended in 2000, 2002, and 2010	1995	DoE
National Environmental Management Action Plan	1995	DoE
Environmental Conservation Rules 1997	1997	DoE
Lead Acid Battery Recycling Related Circular	2006	DoE
Medical Waste (Management and Handling) Rules 2008	2008	DoE
National 3R Strategy for Waste Management 2010	2010	DoE
Local Government (City Corporation) (Amended) Act 2011	2011	LGD
Hazardous Waste and Ship Breaking Waste Management Rules 2011	2011	DoE
Ship Breaking and Recycling Rules 2011	2011	Ministry of Industries
National Environmental Policy 2013	2013	DoE
Seventh Five Years Plan (FY 2016–FY 2020)	2015	Ministry of Planning
Electrical and Electronic Product Induced Waste (E-waste) Management Rules 2017	2017	DoE
Draft Solid Waste Management Rules 2018	2018	DoE

Though DNCC collects municipal solid waste generated by citizens in daily basis, people sometimes discharge waste into open spaces, drains, canals, or their own backyard rather than DNCC's designated secondary collection points. In 2019-2020, the total amount of collected waste is 1,002,561 tons. The highest and lowest amount of waste were collected from Ward-1 and Ward-10, respectively. Ward-wise amount of waste collected from the existing wards in 2019-2020 are presented in the subsequent charts.

system has not been introduced yet, so the newly extended 18 wards have not been shown. The waste collection vehicles are giving additional trips to collect the waste from these wards and sometimes special cleaning programs are arranged.

DNCC currently collects 80% of solid waste by using their available vehicles. More collection rate could be achieved by introducing more vehicles and adopting more efficient and modernized collection system in the city.



Ward-wise waste collection amount (ton)

Waste collection of old 36 wards have been shown in the above graphs. DNCC has started collecting waste from the newly extended 18 wards late 2019. But proper waste collection

1.4 Expenditures related to SWM

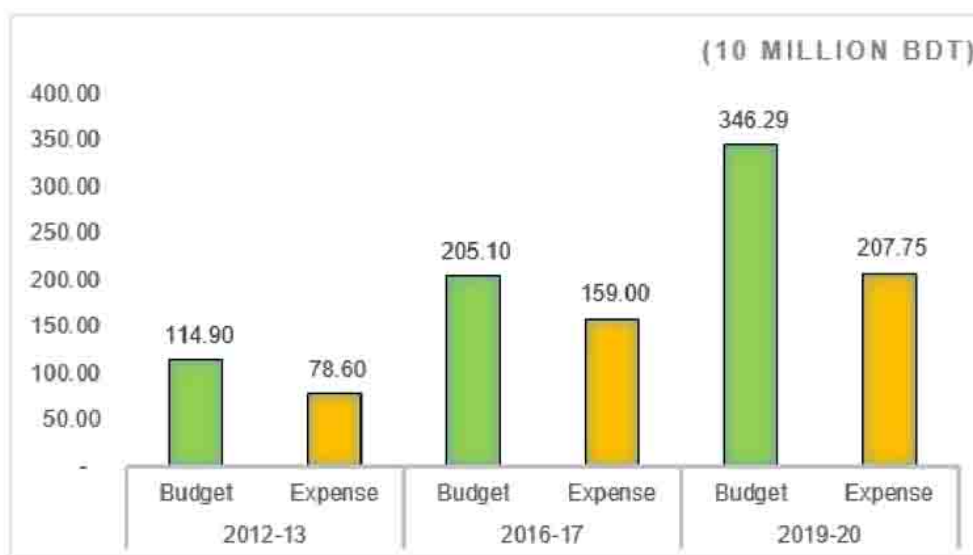
The total SWM expenditures increased in FY 2012-2013 and reached approximately Tk.

1590 million in FY 2016–2017, of which 86% and 14% were revenue and development expenditures, respectively. The total DNCC budget was Tk. 26086 million for FY 2019–2020. The SWM budget accounted for 7.98%, at Tk. 2081.3 million.

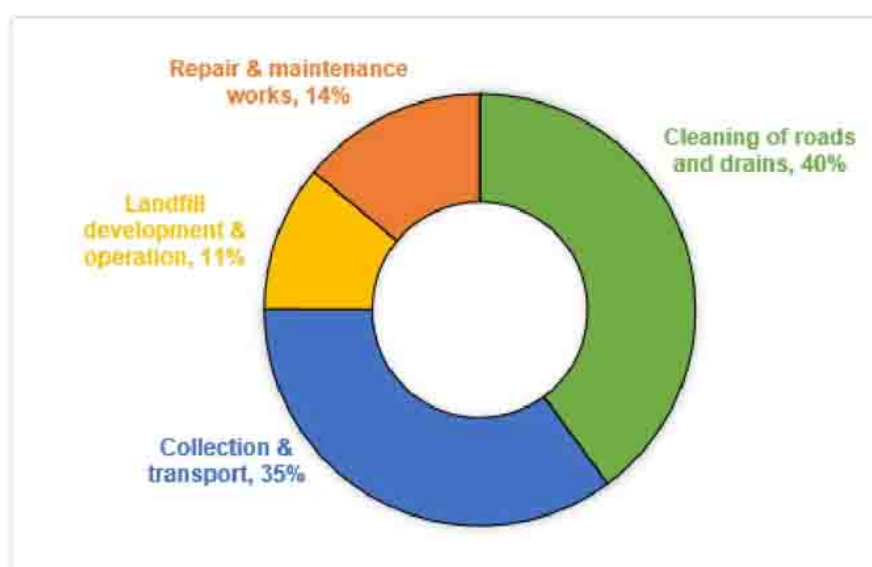
The conservancy tax income was Tk. 483.33 million. In 2019-2020 proposed SWM Budget was 3467 million BDT but actual expense was 2081.3 million BDT. The following bar chart shows the SWM budget and expense (actual) in different FYs.

The SWM operation in DNCC is categorized into four types: i) Cleaning of roads and drains, ii) Collection and transport, iii) Landfill development & operation, and iv) Repair works.

These four categories account for 40%, 34.67%, 11.29% & 14.04% respectively in 2019-20 FY. The operation-wise expenditures of SWM were presented in the pie chart shown below.



Expenditures Related to Solid Waste Management²



Operation-wise SWM expenditure

² DNCC Budget Book

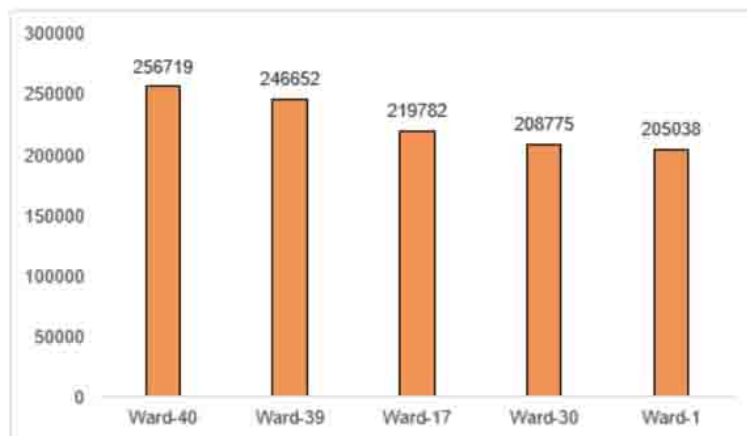
2. POPULATION TRENDS

Dhaka is the largest urban city in Bangladesh and one of the largest and most densely populated cities in the world³. Employment opportunities, health care services and educational services are readily available in Dhaka city which influence rapid human settlement. As daily waste generation amount is augmenting simultaneously with rapid urban growth, solid waste management system is getting more intricate and diversified.

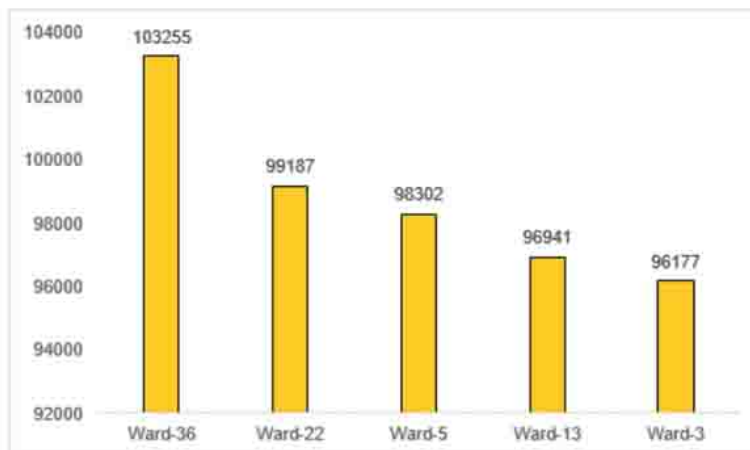
According to New Clean Dhaka Master Plan 2018-2032 (under approval process by LGD), population of DNCC has been estimated as 6.1 million in FY 2019-20, which was 3.95 million in

the census of 2011. In this city, Ward-40 has the highest population (256,719); while Ward-42 has the lowest population (16,722). DNCC has an average population density of 31,488 per sq. km with maximum and minimum population density of 103,255 and 2,693 in Ward-36 and 42, respectively.

Both population and population density have been divided into five classes in the map given in the following page. According to the classification, Ward-1, 17, 30, 39 and 40 fall into the class of the highest population; while Ward-36, 22, 5, 13 and 36 into the class of the highest density.

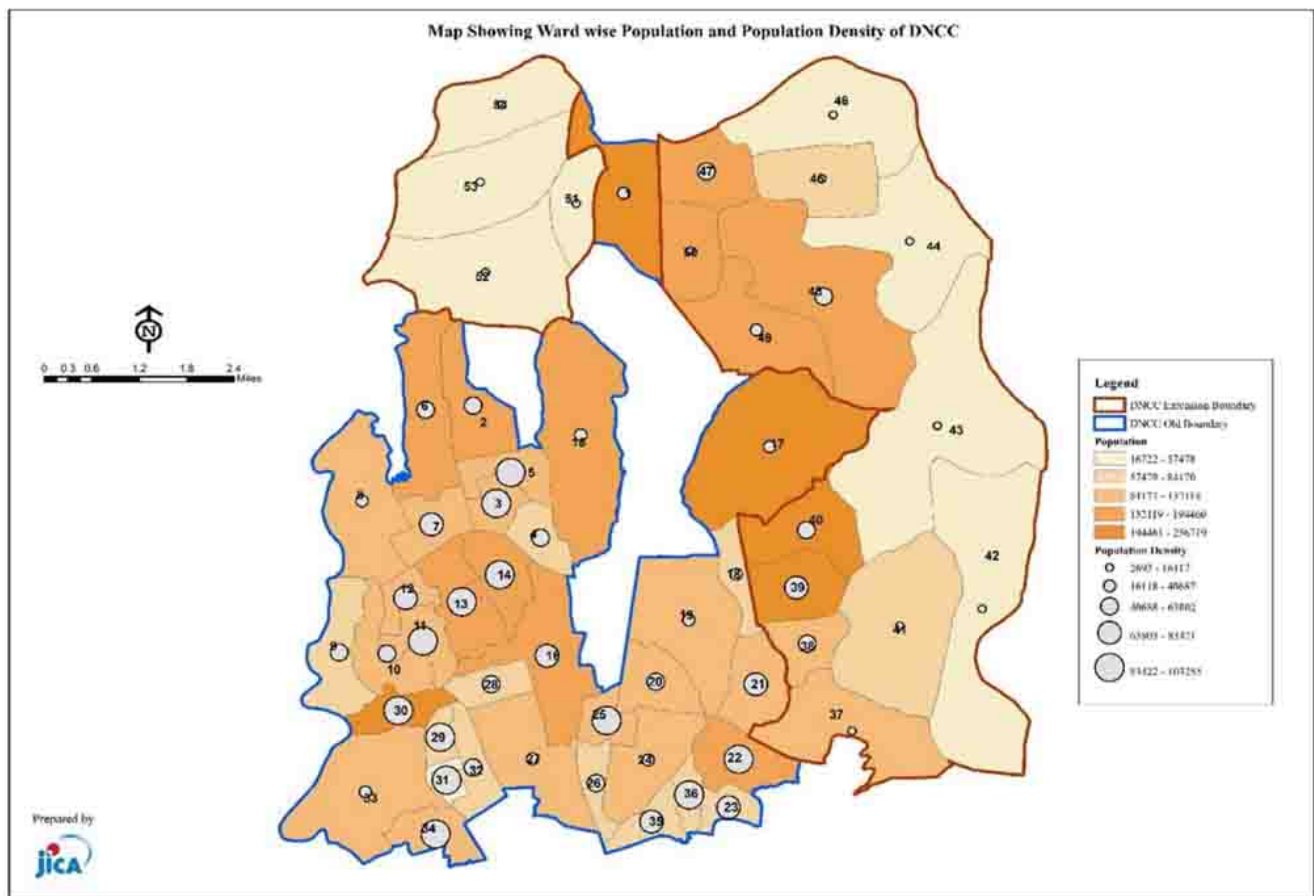


Wards with highest population



Wards with highest population density

³ Source: The World's Cities Data Booklet, United Nations.



Map of population and population density of DNCC

3. WASTE COLLECTION

Waste related responsibilities of DNCC include collection of waste from dustbins/containers for transport to its final disposal sites. Households are responsible for carrying their waste to DNCC's waste collection points where dustbins/containers are located and to secondary transfer stations (STSs). This activity is accomplished by the PCSP. After the PCSP's activity, secondary collection of the waste from secondary collection points (SCPs) and STSs is the CC's responsibility. DNCC also takes support from private companies to provide waste collection and transportation service in some wards.

3.1 Primary Waste Collection

Waste collection from the points of generation i.e., households or buildings is usually considered as primary collection if such wastes are disposed to the secondary collection point of municipal services of DNCC. Door-to-door

waste collection activity is common in almost all the wards of DNCC. It is prevalent due to high population density and long distance of secondary collection point. The entities providing primary collection or door-to-door collection services are recognized as PCSP or Primary Waste Collection Service Providers. According to the JICA Project Team's survey (2018), there are around 418 PCSPs regularly working in DNCC.

PCSPs collect waste from door-to-door and transport the waste to dustbins/containers, or sometimes to vacant lands by rickshaw vans. PCSPs are using various forms or mix of forms of SCPs such as compactor (in or outside of STS), container (in or outside of STS) and even in some cases, unfortunately, they use open dumping or illegal points. However, DNCC is trying to sort out these issues by several means such as formalizing the PCSPs by tendering process, setting strict guidelines and



Flow of waste collection and transportation System

constructing new STS at the existing and newly added wards.

Zone Wise Statistics of Primary Collection Service Providers:

There are registered or unregistered individual person or organization with one or more rickshaw vans and hand trolleys. The status or pattern of PCSPs is variable amongst the wards, and it also varies with the pattern of community. A club, Community-Based Organization, NGO, private company, housing society, individuals are major forms of the PCSPs.

Types of PCSP in DNCC

Zone No.	1	2	3	4	5	Total
Ordinary PCSP	22	55	76	44	42	239
Housing Society	12	11	20	34	2	79
Personal Rickshaw	22	9	7	9	23	70
Van						
Private Company	0	0	1	0	0	1
NGO	0	2	2	0	0	4
Others	0	9	5	10	1	25
Total No.	56	86	111	97	68	418

Among the total 418 PCSPs of 6 different categories, ordinary PCSP van service is the most prevalent contributing approximately 60% to the total no of PCSP. Apart from the ordinary PCSPs, in many places of DNCC, waste is collected by the Housing Society and personal rickshaw vans. At present, DNCC is planning to appoint fixed PCSPs in each ward through tendering process which will formalize the primary waste collection sector, and ensure sustainable solid waste management.

Zone-wise Cleaners Statistics

Altogether, 3,914 cleaners are regularly working relentlessly for the common goal, to keep Dhaka city clean. The cleaners are responsible for street, drain, truck and STS cleaning. Among the existing wards, Ward-1, 17, 18, 19,

20, 21, 24, 25 of Zones 1 and 3 are under privatization. Sometimes DNCC runs special cleaning activities in the newly added extension wards with the help of the private company cleaners. The number of cleaners has not been insufficient considering their work volume and scope. Zone-wise distribution of cleaners has been shown in the table below.

Zone wise distribution of cleaners

Zone No.	1	2	3	4	5
DNCC					
Street Cleaner	-	475	230	446	834
Drain Cleaner	-	40	12	31	33
Truck Cleaner	-	56	45	118	159
Private Company					
Street Cleaner	450	-	620	-	-
Drain Cleaner	100	-	175	-	-
STS Cleaners	40	-	50	-	-

3.2 Secondary Waste Collection

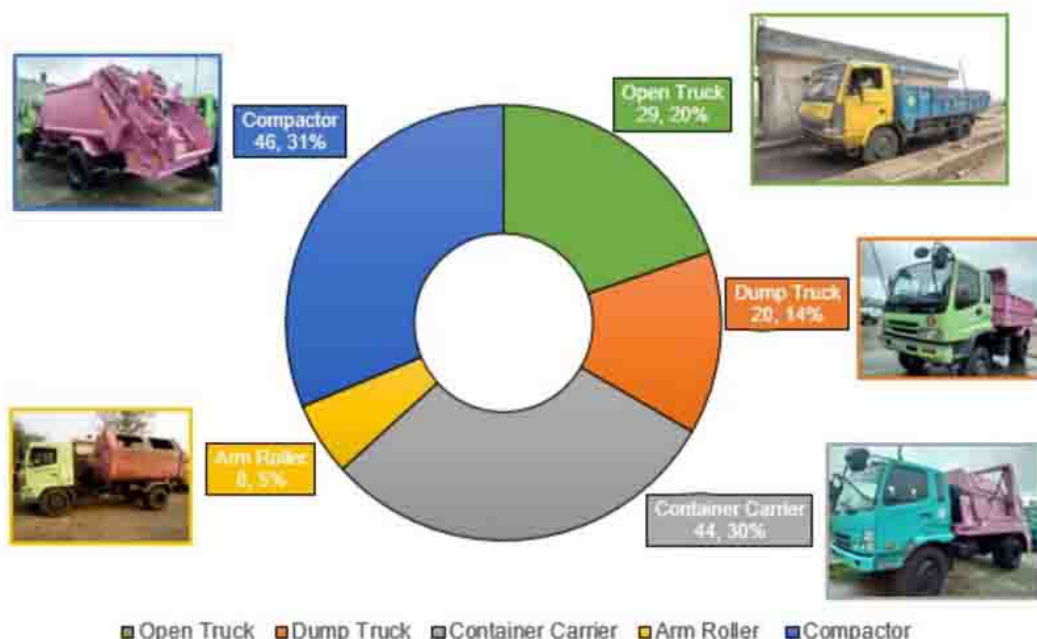
Waste accumulated in SCPs (STSS, Container and dustbins) are categorized in three types based on the source of waste: household waste, street waste including sludge from drainage, and business waste. There are four different types of secondary collection receptacles: concrete bins/dustbins, containers, arm roll containers, and compactors for direct transport without waste storage. Open curbside waste accumulation is sometimes used at designated points for areas where container placement is difficult.

List of Collection Vehicles

There are altogether 147 waste collection and transport vehicles in DNCC among which 140 vehicles are under operation and other vehicles are under repairing. DNCC is gradually shifting towards compactor driven waste collection and transportation system considering its environmental friendliness. There are altogether 46 compactors in DNCC which is 31% of the total waste collection vehicles. The summarized list of the collection and transport vehicle of DNCC is stipulated in the table of the following page.

Zone wise distribution of cleaners

SL	Item	Total	Under Operation	Under Repairing
1	Container Carrier	44	40	4
2	Arm Roll	8	7	1
3	Compactor	46	46	0
4	Open Truck	29	27	2
5	Dump Truck	20	20	0
	Total	147	140	7



Number of Waste Collection Vehicles and Percentage

Ward Wise Secondary Transfer Station (STS)

DNCC has built 5 new STSs in FY 2019-20 to stop the open dumping of wastes in the city. The location of all STSs is given in the following page.



Newly constructed secondary transfer station

Location of all secondary transfer stations

Zone	Ward	STS Location	Zone	Ward	STS Location		
1	1	BDR Bazar, Uttara	3	22	Banasree		
		Section-12, Kabarsthan, Uttara		23	Khilgoan Kabarsthan		
		Jashim Uddin Road, Uttara		24	Tejgoan, Orion Circle		
		Ranabhola, Section-10, Uttara			Tejgoan, Rolling Mills		
	17	Kuril Bishwa Road		35	Tejgoan, Begunbari		
		Nikunja-2, West Side Road-18			Under the Maghbazar Flyover, Eskatan		
		Khilkhet Railgate		36	BTCL Wasa Pump, Maghbazar		
		Niketan, Gate-02		9	BTRC Bus Counter, Gabtoli		
		2		2	Mirpur Ceramic Road	4	10
	3			Mirpur Jalladkhana	11		Mohona Pump, Technical
Mirpur DNCC Market			Kallyanpur Bus Stand				
4	Baishteki Culvert, Mirpur		12	Tollerbag			
5	East Side of Kashli Road, Mirpur		14	Agargoan, Taltola Bus Stand			
6	Arambag Culvert, Mirpur		16	Kachukhet, Wasa Pump			
7	Shialbari Mor, Mirpur		5	26	Tejkunipara, Khelaghar Math		
	Adjacent to Proshikha Building			28	Karwanbazar		
	8				Rainkhola, Mirpur	Orthopedic Hospital, Shyamoli	
	15			Vashantek bazar, Mirpur	29	Agargoan Science Museum	
Manikdi Kabarsthan		Ringroad Badshah Faisal School					
3	18	Notun Bazar		30	Dhaka Uddyan		
	19	TNT Playground, Korail		31	Mohammadpur Town Hall		
		Gulshan Shooting Club		32	Mohammadpur Fertility		
		Banani BTCL Office		33	PGR, Ganabhaban		
	20	Mohakhali Kachabazar			Bosila Bridge		
				34	Jaker Dairy Firm		
				37	Rayer Bazar Beribadh		
		10	Eastern Housing Ltd., Aftabnagar				

List of Private Company and Their Activities

At present, the waste collection and transport system has been outsourced and implemented by private sectors in eight wards of DNCC. The scope of works of the private companies are from the road/street sweeping and drain cleaning to waste transportation to Aminbazar landfill site.

Summary of the private sector operation

SL. No.	Name of the company	Working area	Total Staff	Total vehicle & equipment
1	Cleantech Limited	Zone 1: Ward 1	391	72
2	Rakib Enterprise	Zone 3: Ward 21 and 25	262	74
3	M/S Multi International	Zone 3: Ward 18, 19 & 20	615	137
4	Khandokar Brothers and Network	Zone 1: Ward 17	224	27

3.3 Street Sweeping

DNCC cleaners are often reviled for the nuisance they create by leaving a choking, eye-watering cloud of dusts behind them when at work. Altogether 1,985 street cleaners of DNCC start their job at 4 AM in the morning and finish by 8 AM. They are engaged with street sweeping along with removing trash and street garbage, waste collection and disposal activities. 494 cleaners are involved in drain cleaning, truck cleaning and STS cleaning.



Street Sweeping

Cleaners face several difficulties and challenges like floating vendors, scattered street hawkers, illegal roadside tea stalls and hotels/restaurants, roadside vegetable/fish/fruits markets/bazars, at the time of street sweeping. Besides that, digging and cutting of city roads/streets and dumping or storage of construction materials on the main road/city create both street and drain cleaners' job more problematic and challenging. In rainy season, this situation gets worst. Almost 450-ton street waste (excluding construction materials) is collected every day. Along with manual street sweeping, DNCC also use mechanical road sweeper to clean the street.



Mechanical road sweeper

3.4 Drain cleaning activities

Drain cleaning is one of the major activities of WMD. Unlike street cleaning, drain cleaning is not a daily job but periodically and upon necessity, cleaning is done by the drain cleaners of WMD. Both the manual and automatic drain cleaning are practiced by the WMD. Altogether 391 drain cleaners are working dedicatedly to solve the drain blockage and water stagnation issues. DNCC is gradually shifting towards automatic drain cleaning system from the manual drain cleaning. DNCC has total three jet and sucker for automatic road sweeping.



Manual drain cleaning



Drain cleaning by jet and sucker

4. WORKSHOP OF WASTE MANAGEMENT DEPARTMENT

The WMD workshop is located at Gabtoli. At this moment, The WMD workshop is only responsible for overseeing the periodic maintenance of the waste collection vehicles whereas the breakdown maintenance is overseen by the Mechanical Department workshop and sometimes outsourced.

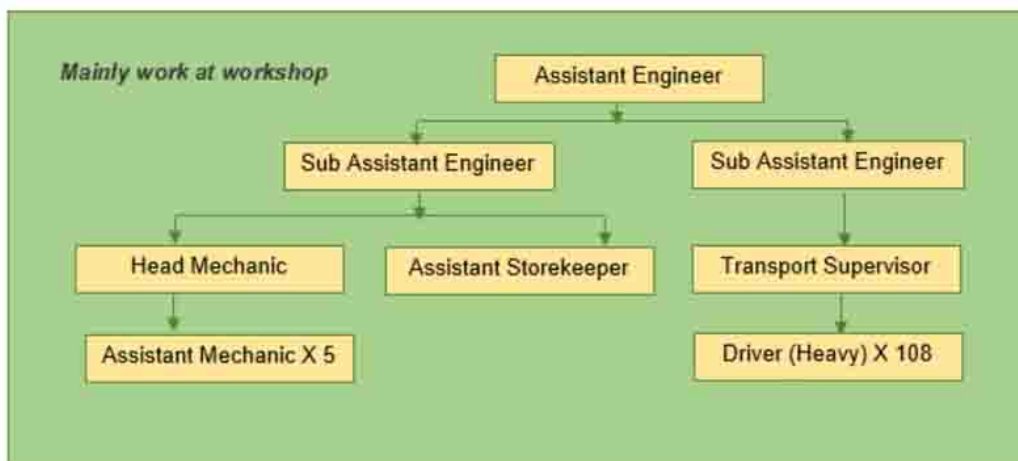
JICA has conducted training programs on the preventive maintenance, and health and safety at the WMD workshop to introduce sustainable workshop management which will enhance the life span of the vehicles in the long run.



Gabtoli Workshop



Training at Gabtoli Workshop



Flow of waste collection and transportation System

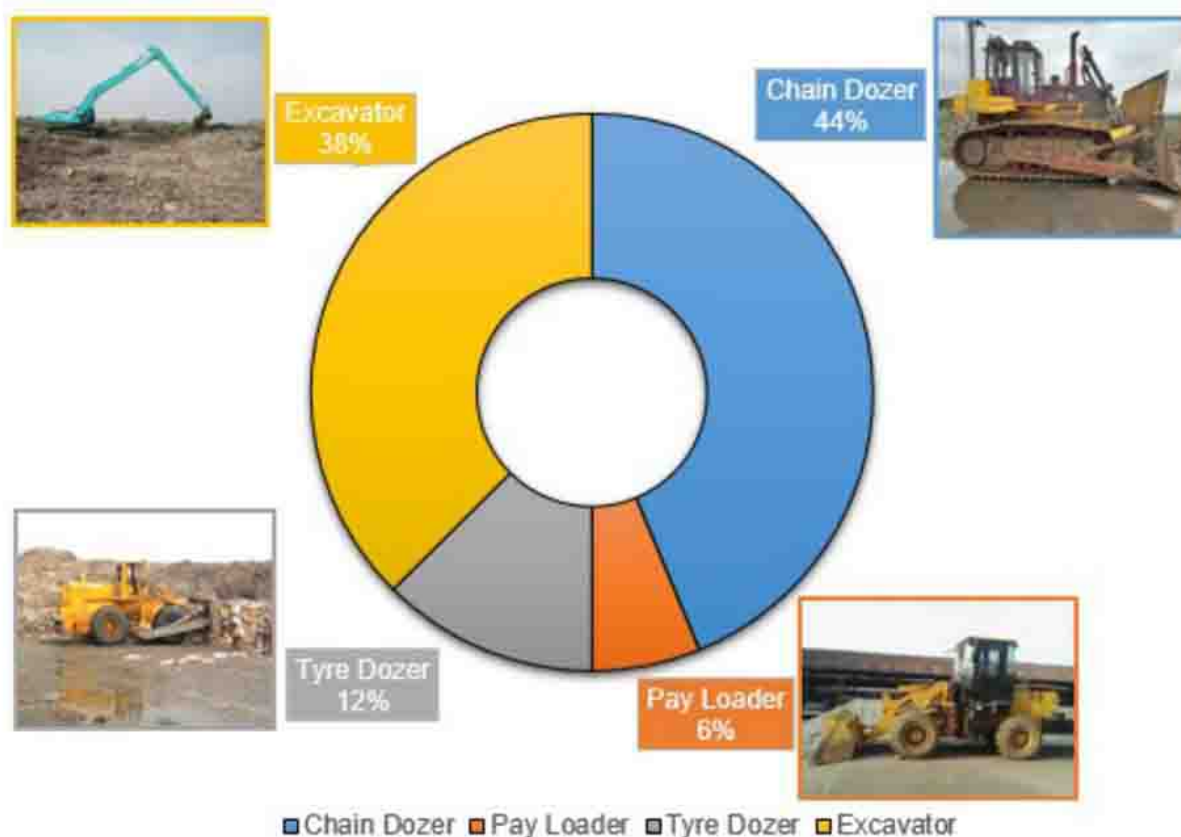
Item	Description
◇	Truck scale
◇	Car wash facility
◇	Dumping platform
◇	Access road
◇	Workshop

Heavy Equipment for Landfill

A list of heavy equipment used in the LFS of DNCC is given in the table below.

Summary of DNCC heavy equipment

SL No.	Item	Total	Under Operation	Under Repairing
1	Chain Dozer	7	3	4
2	Pay Loader	1	1	-
3	Tyre Dozer	2	1	1
4	Excavator	6	5	1
Total		16	10	6



Landfill Operation and Management

The main functions of Aminbazar LFS includes to receive waste, to place the waste in systematically arranged cells, to protect the environment, and to stabilize and return the waste to the soil. Aminbazar LFS should be managed and operated properly to accomplish these functions properly. The five major activities of landfill operations and management are given below:

- ◇ Vehicle Management
- ◇ Disposal Management
- ◇ Landfill Facility Management
- ◇ Safety Management
- ◇ Environmental Management

Weighbridge

There are two weighbridges installed on the approach road of the Landfill Site. The weighbridges are more advanced and user friendly for the operators and helpful for the drivers for their waste weighing. It saves the weighing time as well as ensures the discipline of the vehicles.



Snippets of New Weighbridge Operation

Leachate Treatment Plant

Leachate treatment by using physical, chemical, and biological methods has been introduced in Aminbazar LFS in 2018 immediate after completing the leachate pond repair. Raw leachate is released into an anaerobic pond (Pond 1), and the treated leachate is transferred through pumps to a chemical mixing tank. At that point, some chemicals such as polymers, ferrous sulfate, and lime are added with purified water. Afterward, the leachate is transferred to a primary clarifier to remove the sludge. The leachate is then transferred to a secondary aerobic unit (Pond 2) that takes 24-hour aeration to keep the aerobic bacteria alive. The leachate is again transferred to a secondary clarifier, and the treated leachate is discharged to a sump to discharge into ambient water. The leachate treatment plant has been designed to treat the effluent from the entire Aminbazar LFS leachate with the following scale:

- ◇ Quantity of effluent - 40 m³/hr.
- ◇ Treatment hours - 16 hours/day
- ◇ Treatment concept - Activated sludge process followed by biological treatment



Snippets of Leachate Treatment Plant

Test result (Physical/Chemical/Bacteriological Analysis of Wastewater Sample of leachate of Aminbazar LFS)

SL No.	Water Quality Parameters	Unit	Concentration Present	ECR 1997			
				Discharge in Inland Water	Discharge into Public Sewer	Discharge on Irrigated Land	Minimum Detection Limit (MDL)
1	pH	-	7.51	6-9	6-9	6-9	0
2	Chemical Oxygen Demand (COD)	mg/l	53	200	400	400	0.2
3	Biochemical Oxygen Demand (BOD5)	mg/l	28.8	50	250	100	0.2
4	Total Suspended Solids (TSS)	mg/l	28	150	500	200	5
5	Ammonia-Nitrogen (NH3-N)	mg/l	14.5	50	75	75	0.017
6	Orthophosphate (PO4) or Reactive Phosphate	mg/l	2.77	-	600	-	0.04
7	Chloride (Cl)	mg/l	120	600	-	600	1

Note: Sample was supplied by WMD of DNCC on 20th December 2020 to Environmental Engineering Laboratory, BUET.
Date of test: 20/12/2020 – 27/12/2020

Weighbridge

A Car wash pool with three sets of high-pressure machines is in operation for 24 hours basis. This facility is used for washing the tires of waste collection vehicles after completion of each trip. The tires of the waste collection vehicles must be cleaned before they exit the landfill site for parking in the garage. A new car washing ramp has been built close to the existing car washing pool. This ramp will be useful for the heavy equipment washing.



Washing bay at Aminbazar LFS

Soil Cover and Greenery

Three locations of the piled wastes are covered with soil and then turfed which made the waste piles green and beautiful. This soil covering as

well as turfing shall be continuing in future to create a greenery environment in the Landfill site.



Soil cover at Aminbazar LFS

Landfill Operation Monitoring

A computerized monitoring system with CC TV has been set up around the landfill site. This allows 24 hours online monitoring of entry, exit, weighbridge, general area of dumping and personnel on duty.

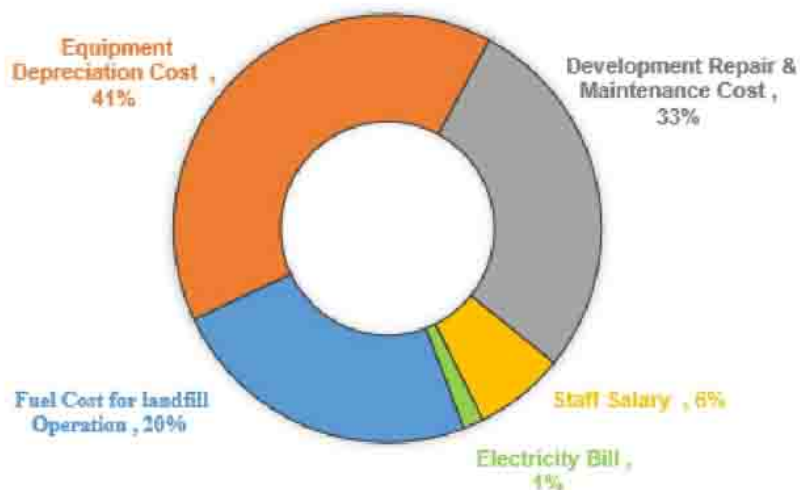
Landfill Operating Cost

Generally, a sanitary Landfill involves high operating cost as multiple types of vehicles are engaged round the clock. Moreover, the heavy

metal contents in waste management and depreciation cost of equipment add up the operating cost. This cost is minimized through careful planning, leachate treatment and regular supervision of landfill activities. Landfill operating cost for per ton waste is 249.80 BDT. The landfill operation cost of 2019-2020 is listed below.

Landfill Operation Cost of FY 2019-2020

Sl. No.	Item of Expenditure	Cost (Million BDT)
1	Fuel Cost for landfill Operation	48.00
2	Equipment Depreciation Cost	100.00
3	Development Repair and Maintenance Cost	80.00
4	Staff Salary	15.00
5	Electricity Bill	2.33
	Total	245.3

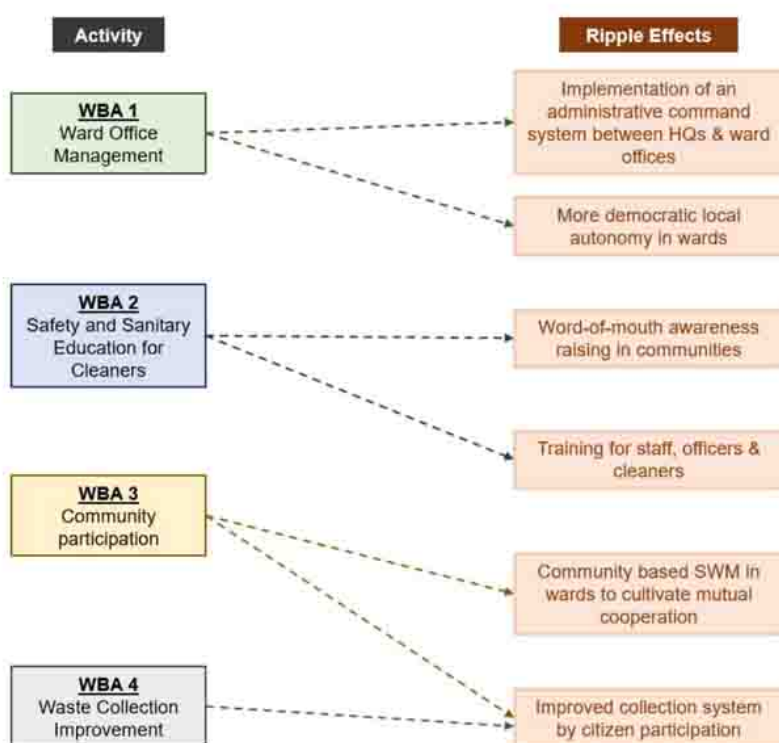


Breakdown of LFS operation cost in percentage

6. WARD-BASED APPROACH IN WASTE MANAGEMENT

Ward-based Approach (WBA) intends to build synergy of related activities in the wards of DNCC through decentralization and synchronization of intensive resource input which includes the four main interlinked components. This approach was first introduced to Dhaka city as part of the previous JICA project. Description on the components of WBA has been given in the picture below:

DNCC constructed one ward office in FY 2019-2020. At present, 23 wards of DNCC have respective ward offices among 36 existing wards. DNCC plans to construct ward offices not only in the existing wards but also in the newly added 18 extended wards, but availability of adequate land is an obstacle to overcome. The map in the following page shows the SWM ward offices of the existing wards.



Effects of WBA components

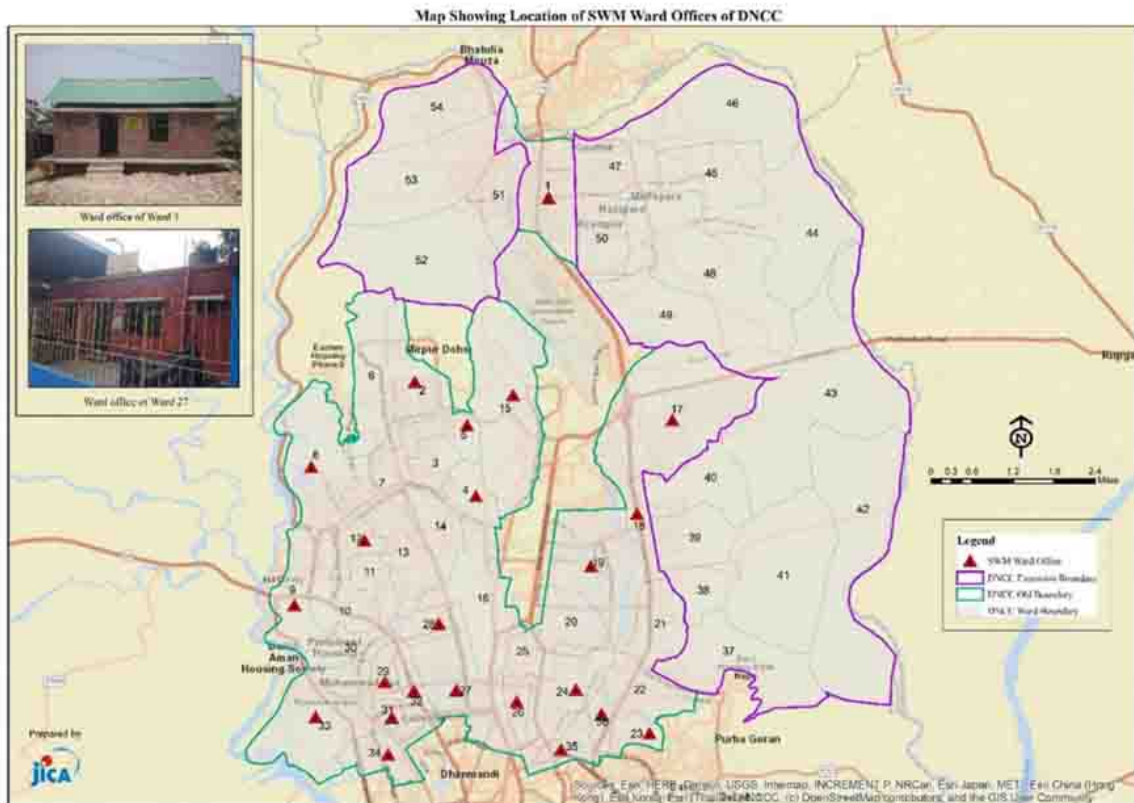
WBA 1

WBA 1 is designed to strengthen the ward office management so that various types of SWM activities in each ward office can be handled effectively which include:

- ◇ SWM data management
- ◇ Cleaner management
- ◇ Communication with communities for problem solving
- ◇ Complaint response

WBA 2

The purpose of WBA 2 is to improve the working environment of cleaners for better occupational health, safety and environment (OHSE) and provide knowledge to cleaners on OHSE to protect themselves. During FY 2019-2020, DNCC has organized 13 cleaners' workshops on safety education. JICA has supported preparation of various training materials after outbreak of COVID-19, which cover guidance on maintaining proper occupational health and safety during the pandemic. DNCC has ar-



Map of DNCC's SWM ward offices

ranged safety training programs on each ward for guiding the cleaners based on the training materials.

WBA 3

WBA 3 aims to engage the community for participatory solid waste management of wards. In FY 2019-2020, DNCC Mayor has been undertaking several activities to increase community awareness in the wards of DNCC. WMD has organized shop awareness program in ward-19 and 20 with JICA's support.



WBA2 workshop



Shop awareness rising program



Snippets of WMD's organized community meetings

WBA 4

The objective of WBA 4 is to harmonize primary and secondary collection and to promote a safe and sanitary work environment. Within WBA 4, there are two divisions which include:

- ◊ WBA 4A: Introduces new collection system to improve efficiency and sanitary conditions of collection and transport
- ◊ WBA 4B: Improves the present collection system with the involvement of the community and the PCSP

DNCC has been carrying out canal cleaning activities to improve present waste collection system as residents living nearby canals used to dump waste on canals regularly. Using canal as open spot for dumping is one of the main hindrances on proper waste collection. As part of introducing new waste collection system in FY 2019-2020, secondary waste collection within wards is done through operation of 46 compactors.

WBA Core Group Meeting

WMD organizes WBA core group meeting in DNCC office on monthly basis where head-quarter officials (CWMO, Superintendent Engi-

neer and Executive Engineer) and field officials (ACWMOs, CIs and COs) join. During FY 2019-2020, 8 core group meetings were organized by WMD. The agenda of those core group meetings were selected based on the urgent issues and activities of the time being. However, the core group meetings were suspended during the outbreak of COVID-19.



Snippets WBA core group meeting

7. MUJIB-YEAR ACTIVITIES OF WMD

Grasping the opportunity of ensuring “Mujib Borsho,” or Mujib Year; the birth centenary of Father of the Nation Bangabandhu Sheikh Mujibur Rahman, the GoB focused on implementing a nationwide “Clean Village-Clean Town” program in 2020, among all ministries and government organizations, to inspire all to keep them and their surroundings neat and build a clean Bangladesh. As a part of this program, LGD issued a letter to all city corporations, municipalities and upazilas to take necessary actions to make this program successful.

According to the LGD’s letter, WMD took initiatives of short-, mid-, and Long-term action plans. The activities under the mentioned action plans are as follows:

Short-term Action plan (3 Month Program)

- ◊ Ward-wise weekly community meeting to discuss on citizen participation in SWM
- ◊ Ward-wise weekly institutional program (school, college, university, hospital, office, shopping complex etc.) with special cleaning in corresponding premises
- ◊ Ward-wise weekly special cleaning campaign
- ◊ Waste segregation campaign in ward level (four times at each ward in a year)
- ◊ Ward-wise public awareness campaigning on bio-degradable waste bag instead of using polythene/plastic bag (Slogans are like that: “Stop using Polythene, Heal Dhaka City”/ “Don’t be a plastic junky”/Say No to Plastic/” Avoid Plastic, Make Dhaka Green and Clean”/” Think before you trash it”)

Mid-term Action Plan (1 Year program)

- ◊ Ward-wise awarded best institution and society (twice in a year)
- ◊ Zone-wise ward contest (three times in a year)

- ◊ Zone-wise special cleaning (one critical ward from each zone)
- ◊ Make ZERO OPEN DUMPING DAY in every ward
- ◊ Ward-wise dumping station/STS/ designated spot special cleaning campaign (once in a month)
- ◊ Ward-wise cleaners’ workshop (trice in a year)
- ◊ Ward-wise primary collection service provider (PCSP) training (twice in a year)

Long-term Action Plan (Continuous)

- ◊ Zone-wise awarded best institution and society (twice in a year)
- ◊ Clean Dhaka ward contest (once in a year)
- ◊ Waste free day/clean Dhaka clean day program in central level with participation of all kinds of government officials and general people

Special Cleaning Activities for Mujib-Year

With the Corona virus spreading in Bangladesh and considering the outbreak across the world, DNCC as well as the GoB decided to postpone all public gathering related activities. In such a difficult situation, Honorable Mayor of DNCC has inaugurated some yearly special cleaning activities as a part of the Mujib Year activity.

8. QURBANI WASTE MANAGEMENT

Due to rapid economic growth, the city's waste management has been challenging for keeping the city clean for its dwellers during special festivals like Eid ul-Adha. Over the last half decade, government have taken initiatives to aware citizens to slaughter their sacrificed animals in designated spots. As a result of government initiatives and imposed regulations for Eid ul-Adha, DNCC has been experiencing improvements for cleaning and bringing back livable environment immediately after the religious ritual.

Summary of Qurbani waste management

No. of wards	36
Designated spots near own residence	350
Designated spots given by DNCC	539
Open slaughtering spots in roads	250
Total cleaner	9,500

Honorable Mayor of DNCC has been monitoring the Eid ul-Adha arrangements and preparation which started three months before, with sincerity. A formulated action plan is generated for synchronizing all key stakeholder's work with the councilors, department heads, zonal executive officers, ACWMOs and CIs for conducting the operation smoothly.

There were 183 designated spots by DNCC to slaughter sacrificed animals. In addition, 356 spots were identified for slaughtering in residential complexes which makes it to a total of 539 spots. Different from the previous years, citizens had more positive approach on slaughtering sacrificed animals in the designated spots allocated by DNCC. In Dhaka North City, approximately 2,55,000 sacrificed animals were slaughtered during the Eid ul-Adha. Cleaners from DNCC and PCSPs made quick removal of waste efficient collection and transportation to containers in STS. Containers in the designated sports and STSs were transported to the landfill immediately once they

were occupied. In FY 2019-20, WMD collected 12,700-ton qurbani waste by using 260 waste collection vehicles and disposed to LFS.



Qurbani waste management

WMD removed all wastes within 24 hours. To encourage cleaner's effort in Qurbani waste management, Honorable Mayor organized a lunch party with all cleaners of DNCC.



Lunch arranged by Honorable Mayor for cleaners

9. PR ACTIVITIES OF WMD

DNCC understands the importance of public awareness and PR in solid waste management, and has been very active in updating waste management activities on social media platforms such as Facebook, official website of DNCC.

TV Program

JICA's Technical Assistance (TA) Project for Strengthening Solid Waste Management in Dhaka North City, South City & Chittagong City prepared first ever 5 episodes documentary series on solid waste management to raise awareness among general citizens, stakeholders, and government officials. Honorable Mayor as well as WMD officials including CIs participated in the documentary series. The documentary series broadcasted on national television and social media platforms. Five episodes of the documentary are as follows.

- ◇ Episode 1: Footprint of clean Dhaka-History of clean Dhaka
- ◇ Episode 2: Development of the Master Plan
- ◇ Episode 3: Community Participation Through Ward Based Approach
- ◇ Episode 4: Technologies in Solid Waste Management: LFS & Waste-to-Energy
- ◇ Episode 5: Waste Management Policies in Bangladesh

All episodes are available on DNCC's Facebook page as well as YouTube channel.

DNCC Citizen App

DNCC launched a smartphone application to ensure its accountability to city dwellers. The application called 'Shobar Dhaka' which is a citizen engagement management platform

through which DNCC citizens can easily avail services provided by the corporation. Through this application, citizens can submit issues like road, mosquito, streetlight, garbage, waterlogging, public toilet, drainage, and illegal structure directly to the concerned officials, employees, and councilors of DNCC. Besides, all the information of the City Corporation can be found in the application.



'Sobar Dhaka' app

Newsletter

JICA Project Team of the TA project collaborated with the public newsletter "Shokoler Kotha" to update and publish news on waste management of DNCC. The news was published twice a month from June 2020 for 6 months. The newsletter was distributed to all local government offices across the country. The news publications were also available online.

10. ACTIVITIES & INITIATIVES DURING THE COVID-19 PANDEMIC

WMD contributed great effort from the beginning of COVID-19 pandemic. WMD officials showed their dedication and devotion to their regular responsibilities as well as special duties and tasks assigned by Honorable Mayor of DNCC even in the peak situation of spreading the virus. The activities carried out by WMD as per the directions of the LGD in consultation with Honorable Mayor of DNCC are highlighted as follows:

Personal Protective Equipment (PPE) Distribution

DNCC has provided PPEs to field level WMD field level officials as they were monitoring regular field level waste management related activities. DNCC has also distributed 700 PPEs among all truck cleaners, STS cleaners, compactor cleaners, and 5000 smart jackets, 1,000 pair of gumboots, 5,000 pair of high quality long-gloves and 8,000 masks to cleaners and other field level officials as well as WMD and health officers.



'PPE for waste management field level officials



'CI monitoring disinfectants spraying at W#32, DNCC'

Liquid Disinfectant Spray

WMD sprayed liquid disinfectants using 10 water bowsters (water carts) throughout the city since March 2020. DNCC emphasized on regular spraying to all main roads, footpaths, foot over bridges, quarantine areas, surrounding of important hospitals, markets, mosques, inter-district of Mohakhali and Gabtali terminals, dustbins, secondary transfer stations and slums. A total of 1554000liters of liquid disinfectant have been sprinkled to around 16180000 in DNCC.



'Spraying disinfection liquid mixed with bleaching powder using Water Bowser



'Honorable Minister of LGD and Honorable Mayor of DNCC inspecting disinfectant spray activities in front of Mirpur Cricket Stadium

Ward-wise Special Cleanliness Activities

In addition to combating dengue and preventing the corona infection, DNCC has initiated a ward-based special cleaning campaign during COVID-19 pandemic situation in April 2020. Each ward has been divided into 7 areas and the entire ward has been cleaned in two phases in 7 days through a special cleaning cam-

paign. Concerned CI of each ward has supervised these special cleaning activities along with other regular cleaning activities. In addition, the CWMO, and other WMD officials have carried out periodic inspections to ensure that these activities are completed properly.



Inspection of cleanliness activities by DNCC HQ officials (top) and W#31 councilor

Hon'ble Minister of LGD, MD Tajul Islam along with Honorable Mayor of DNCC inspected the special cleaning activities as well as inspiring citizen to fight against both dengue and COVID-19.



LGD Minister and DNCC Mayor inspected special cleaning program at W#18, DNCC

Special Drain Cleaning Activities

Special drain cleaning activities have been completed throughout the month of April 2020 under the WMD to control dengue and water logging as well as to prevent the corona infection. 12 cleaners were appointed in each ward to complete the related activities. These activities are regularly monitored by respective CI of the wards. In addition to supervision, other senior officials from HQ also visited to inspect such activities whether it is carried out properly.



'Special drain cleaning activities



'DNCC CWMO inspecting special drain cleaning



'DNCC HQ official inspecting special drain cleaning



'CI monitoring W#33 drain cleaning activities

Special Cleaning Activities of Govt. Offices and Hospitals

In addition to ward-wise special cleaning operations and drain cleaning activities, WMD is carrying out special cleaning activities to prevent corona infection and dengue in all government offices and hospitals under the DNCC. For this purpose, cleaning activities of courtyards and premises of government offices and hospitals of each ward have been conducted by skilled and trained manpower through outsourcing.



'Bangladesh Betar Bhavan



'Department of Archives and Library



'Bangladesh National & Technical Document Center



Department of Social Welfare



'National Parliament House (NAM Building)



National Agricultural Display Center



'Bangabandhu Sheikh Mujib Nano Theater



'Bangabandhu International conference centre (BICC)



Bangladesh Water Development Board



'National Institute of Cardiovascular Disease and Hospital



'National Institute of Cancer Research & Hospital



'National Institute of Traumatology and Orthopedic Rehabilitation

Safety Training to DNCC Cleaners

The concerned CI of each ward informed cleaners about the cleanliness activities before starting the special cleaning activities as well as drain cleaning. In addition to this, CI provided necessary instructions and directions to make the cleaners aware about their health safety during working in such pandemic situation. Sometimes, officials from HQ provided training on safety precautions during cleaning activities. Cleaners have been instructed to follow hygiene rules (i.e., hand washing instructions, wearing masks and gloves, prevent to touch infective materials, maintaining social distance etc.) before and after performing their tasks.



'DNCC Drain Cleaners at W#33 for special drain cleaning activities



'Cleaners Training briefing at W#28 before special cleaning activities



'Safety Instruction before special cleaning at Govt. offices and Hospitals



Cleaning team for special cleanliness activities at Govt. Officials

Safety training to Field level officials

Field level officials of WMD manage cleaners as well as maintain SWM of each ward. WMD arranged and provided training to ward level officials on cleaners' management and safety precautions of cleaners and workers during COVID-19 pandemic situation. In addition, HQ officials of WMD distributed and explained the safety gear monitoring sheet and health monitoring sheet as well as to maintain and to keep record of practicing safety gear and analyzing cleaner's health condition (i.e., body temperature).



'Zone level training to trainers of WMD field level officials



Safety Gear Training for Cleaners and PCSP drivers

Cleaners as well as PCSP van drivers have been trained and directed to use safety gears to ensure not only their own safety but also to ensure better working environment. Cleaners and primary waste collection van drivers have been instructed to follow hygiene rules (i.e., hand washing instructions, wearing masks and gloves, prevent to touch infective materials, maintaining social distance etc.) while working and after working. The importance of safety gear (i.e. masks, gum boots, hand gloves) during the current COVID-19 pandemic situation

was the main topic that has been discussed in the training. Higher officials from city corporations (Councilor, DCWMO, ACWMO), field level officials (CO, CI) also attend in the training.



'Safety Gear Training provided by DNCC for Cleaners (top) and PCSP drivers (bottom)

Safety Training to LFS and workshop workers

DNCC arranged safety training for landfill and workshop staffs. Importance of usage of PPE and safety gear during COVID-19 and regular period have been elaborately discussed through on-stage training. Landfill engineers and workshop officials of WMD facilitated and conducted the training.



'Safety Gear Training at Aminbazar LFS workers (top) and workshop staffs (bottom)

11. COVID-19 CRISIS RESPONSE FROM DONORS & LOCAL AGENCIES

Technical Support from JICA

JICA have given 10,000 citizens leaflets to DNCC to raise awareness among the city dwellers. The main purpose of this citizens leaflet is to inform the city dwellers about household waste disposal management to prevent the spread of corona virus. It also provides ideas on how to store household waste without mixing it with infectious waste such as used masks, gloves, tissue, PPE.

vent the spread of corona virus during work. Even leaflets designed for cleaners have been set in every ward office so that every cleaner can be aware of COVID-19 situation. Two separate leaflets have been prepared for the staff and officials involved in the waste management workshop and landfill. It has been mentioned how the landfill workers as well as waste pickers will be alert and aware about what to do during their work in current pandemic situation.



Citizens Leaflet



Cleaners Leaflet



Leaflet for Workshop Workers



Leaflet for Landfill Workers



Leaflet for Waste Collection Workers



Drivers leaflet

In addition to raising awareness among the city dwellers about waste management during the Corona period, 3 separate leaflets have been prepared to raise the awareness among cleaners, waste collection workers and drivers & helpers of waste collection vehicles under waste management. These leaflet trio has been created based on why and how these frontline workers need to aware of general instructions and avoiding infectious waste to pre-

Cleaners and landfill workers are directly involved in handling and managing solid waste that creates most vulnerable and risky situation during works. JICA has developed two separate manuals to ensure their health and safety. The general guidelines and other hygiene guidelines, as well as what to do at the beginning of work, during work hours and at the end of work, and what to do for the officers involved in conducting their activities are described in the manual.

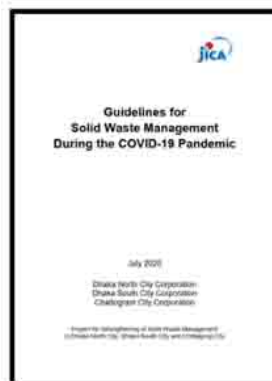


Pocket Size Manual for Cleaners (Left) and Landfill Workers (Right)

Cleaners, waste collection workers, drivers & helpers and landfill workers and workshop staffs are considered at a high risk of getting the virus through disposed masks, gloves, and tissues. JICA prepared guidelines for solid waste management to continue the waste management services of City Corporation with minimum impact by COVID-19, as well as to prevent the spread of COVID-19 as much as possible for protecting people's life and health during the COVID-19 pandemic situation. JICA also prepared a technical guidance for medical waste management response to COVID-19 aiming to clarify the CC's medical waste management response strategy, including emergency measures to secure the supplemental treatment capacity of infectious waste. This technical guideline will also help city corporations for the management of the quarantine areas medical waste.



Technical Guidance on Medical Waste Management response during COVID-19



Guidelines for SWM during COVID-19 pandemic situation

PPE Distribution from UNDP

UNDP, with support from Australia, has provided 5,000 PPE package for urban waste cleaning workers of DNCC as well as Dhaka South City Corporation, Chattogram City Corporation, and Narayanganj City Corporation. UNDP Bangladesh handed over PPEs to Minister of LGD in presence of other high officials from the Government and UNDP. These additional support of getting PPEs from UNDP and the Australian Government for the protection of cleaners further intensify DNCC effort.

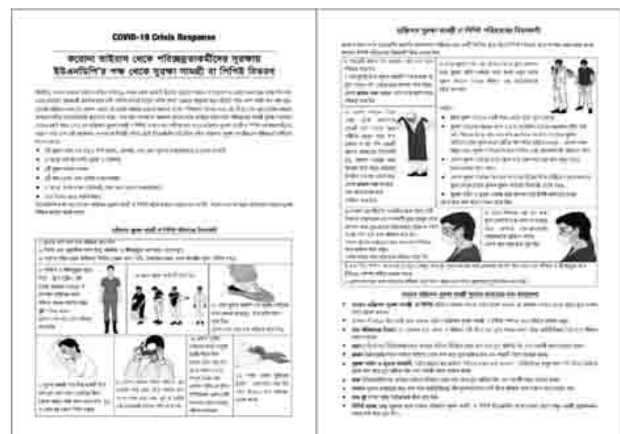
Among 5000 PPEs, DNCC received 1000 packages. UNDP provided PPE with a guide-

line on how to wear or take off these PPE along with its reuse management system. The list of PPE materials of each package is as follows:

- ◇ 1 pc washable, viable & reusable safety gown & shoe cover
- ◇ 1 pc waterproof and durable gum boot
- ◇ 1 pc safety Goggles
- ◇ 1 pc washable & reusable mask
- ◇ 1 pair of washable, durable & reusable rubber hand gloves
- ◇ 200 mm Hand Sanitizer



'PPE Handing over ceremony at LGD



'Instruction and guideline on PPE usage rules prepared by UNDP

PPE Distribution from JICA

Chief Representative of JICA Bangladesh office handed over PPEs to Honorable Mayor of DNCC for cleaners as well as for landfill staffs to keep them contaminated from the corona virus. The protective equipment includes 190 PPE gowns, 190 pairs of gumboots, 190 goggles, 790 pairs of gloves, 38 hand sanitizers,

14,700 masks, 39 thermometers, 38 liquid soaps and 190 bags.



PPE Handing over ceremony at DNCC

Safety Mask Distribution from Decathlon:

Decathlon Bangladesh, an international sporting goods retailer, donated some 20,000 non-surgical fabric-masks to DNCC. The masks are washable and reusable at least 21 times that will be especially useful to protect the corona front-liners of DNCC, who are dedicated to serve the city dwellers, especially cleaning workers and mosquito control workers.



Safety mask distribution at DNCC

12. EXPERIENCE GATHERING OF WMD OFFICIALS

WMD sometimes arrange official visits of different waste recycling/treatment factories to gather knowledge and future DNCC's service improvement on ongoing waste recycling /

treatment systems as well as their capacities. In this regard in FY 2019-20, WMD officials have visited Jashore Municipality as an experience sharing visit.



Solid Waste Management Information and experience sharing between Dhaka North City Corporation and Jashore Municipality



Technical Support: JICA Solid Waste Management Project Team