MONITORING OF SOLID WASTE IN HONG KONG

Waste Statistics for 2023

Environmental Protection Department

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Waste Statistics for 2023

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Cover photos

Top left :	GREEN$ Electronic Participation Incentive Scheme Mobile App
Bottom left :	Pre-treatment Facility for Food Waste / Sewage Sludge Anaerobic Co-digestion Trial Scheme at Shatin
Top right :	GREEN@TSING YI recycling store
Bottom right :	Smart Recycling Bins under the Pilot Programme on Smart Recycling Systems

Contents

AFCD	Agriculture, Fisheries and Conservation Department	漁農自然護理署
AWCP	Animal Waste Composting Plant	動物廢料堆肥廠
C&D	Construction and Demolition	拆建
C&SD	Census and Statistics Department	政府統計處
CEDD	Civil Engineering and Development Department	土木工程拓展署
CWTC	Chemical Waste Treatment Centre	化學廢物處理中心
EPD	Environmental Protection Department	環境保護署
FEHD	Food and Environmental Hygiene Department	食物環境衛生署
FWPF	Food Waste Pre-Treatment Facilities	廚餘預處理設施
GMC	Glass Management Contractor	玻璃管理承辦商
IETS	Island East Transfer Station	港島東廢物轉運站
IWTS	Island West Transfer Station	港島西廢物轉運站
MSW	Municipal Solid Waste	都市固體廢物
N/A	Not Available	沒有數字
NENT	North East New Territories Landfill	新界東北堆填區
NLTS	North Lantau Transfer Station	北大嶼山廢物轉運站
NT	New Territories	新界
NWNTTS	North West New Territories Transfer Station	新界西北廢物轉運站
OITF	Outlying Islands Transfer Facilities	離島廢物轉運設施
O · PARK	Organic Resources Recovery Centre	有機資源回收中心
RTS(s)	Refuse Transfer Station(s)	廢物轉運站
SENT/SENTX	South East New Territories Landfill and its Extension	新界東南堆填區及其擴建部分
STTS	Shatin Transfer Station	沙田廢物轉運站
tpd	tonnes per day	每日公噸數
T ▪ PARK	Sludge Treatment Facility	污泥處理設施
WEEE	Waste electrical and electronic equipment	廢電器及電子設備
WEEE · PARK	WEEE Treatment and Recycling Facility	廢電器電子產品處理及回收設施
WENT	West New Territories Landfill	新界西堆填區
WKTS	West Kowloon Transfer Station	西九龍廢物轉運站
Y ▪ PARK	Yard Waste Recycling Centre	園林廢物回收中心

Introduction

This report presents the statistics on disposal and recovery/recycling of solid waste generated in Hong Kong in 2023. The information contained in this report is compiled from data collected from various sources, mainly including the records of government waste transfer and treatment facilities, such as waste intake records of the treatment facilities. Data are also collected through statistical surveys, including collecting data on recycling quantity of various recyclables from recyclers, and conducting waste composition survey by taking samples at waste treatment facilities to collect data on disposal quantity of various components of municipal solid waste. The data are used to compile annual statistics on recovery and disposal quantities by waste category after data collating and processing. The classification of solid waste and the methodology adopted in data collection are explained in Appendix 1, whereas terms related to the Waste Management System of Hong Kong are elaborated in Appendix 2.

Key observations of the local waste disposal and resource recovery scene in 2023 are summarised in the ensuing paragraphs, with a view to facilitating readers to have a quick overview of the achievements and challenges of our waste management efforts. Detailed statistics on waste disposal and resource recovery are provided in Chapters 2 and 3 respectively. Figures presented in this report may not add up to the respective totals due to rounding.

Key Observations

Waste Disposal in 2023

Total Solid Waste

Solid waste comprises municipal solid waste (MSW), overall construction waste, and special waste. In 2023, the total quantity of solid waste disposed of at the strategic landfills was 5.76 million tonnes. The average daily quantity was 15,783 tonnes per day (tpd), similar to the level of 2022 (Plate 2.1).

Municipal Solid Waste

Municipal solid waste includes domestic waste, commercial and industrial (C&I) waste.

In 2023, the quantity of MSW disposed was 10,884 tpd (3.97 million tonnes), which represented a decrease of 2.2% as compared to 2022. Discounting the factor of population growth, the disposal rate of MSW was 1.44 kg/person/day, lower than that of the 1.51 kg/person/day in 2022.

The major component of MSW is domestic waste. Its quantity of disposal was 6,731 tpd (2.46 million tonnes) in 2023, which has decreased by 1.0% as compared to 2022. On the other hand, the quantity of C&I waste disposed of was 4,153 tpd (1.52 million tonnes) in 2023, which has decreased by 4.1% when compared to 2022.

Plates 2.8 and 2.9 show the composition of MSW disposed of at landfills in 2023.

Of the 10,884 tonnes of MSW landfilled each day in 2023, some 3,191 tonnes (29% of MSW) were ***food waste***, which has decreased by 3.4% as compared to 2022. Domestic food waste disposal rate decreased from 0.31 kg/person/day in 2022 to 0.27 kg/person/day in 2023, while C&I food waste disposal rate increased from 0.13 kg/person/day in 2022 to 0.16 kg/person/day in 2023.

The second largest constituent of MSW was ***waste paper***, with a disposal quantity of 2,171 tpd (20% of MSW) in 2023, which has decreased by 3.2% as compared to 2022. The third largest constituent of MSW was ***waste plastics***. Some 2,120 tpd (19% of MSW) were disposed of at landfills in 2022, which has decreased by 10.5% as compared to 2022.

Overall Construction Waste

Regarding construction waste, the quantity of waste generation dropped by about 4,300 tonnes per day (9%) as compared to 2022 to 45,560 tonnes per day, of which more than 90% of construction waste (41,132 tonnes per day) were recovered either by direct reuse through project matching or by storing it at public fill reception facilities

for reuse in the future. Regarding the construction waste disposed of at landfills, the quantity increased by 300 tonnes per day (7%) as compared to 2022, reaching 4 428 tonnes per day in 2023. The rise is believed to stem from an increase in both the numbers of companies that ceased operation and started new business in 2023 compared to 2022, thereby generating more construction waste associated with renovation and demolition works.

Special Waste

In 2023, the quantity of special waste disposed of at landfills was 471 tpd (0.17 million tonnes), which was on par with that of 2022. On the other hand, as from April 2015, the Sludge Treatment Facility (T ▪ PARK) in Tuen Mun has started treating dewatered sewage sludge from major sewage treatment works managed by Drainage Services Department by incineration, leading to a cumulative reduction of 96% in disposal of dewatered sludges at landfills in 2023 as compared with 2014. On average, 1,116 tonnes of dewatered sewage sludges per day was treated at the T ▪ PARK in 2023.

Resource Recovery in 2023

Hong Kong is a service-oriented economy and hence, its capacity to consume recycled materials in local production is relatively limited. As a result, around 80% of MSW recyclables locally recovered are delivered outside Hong Kong for recycling and around 20% are recycled locally (Plate 3.3).

The overall MSW recovery rate in 2023 was 33%, which has increased from 32% in 2022 (Plate 3.2). MSW recovered for local recycling was about 450,000 tonnes in 2023, representing an increase of 8.4% compared to about 415,000 tonnes in 2022 (Plate 3.5). The changes reflect the improved performance of the local recycling industry amid the strengthened waste reduction and recovery measures. During the same period, the quantity delivered outside Hong Kong for recycling increased from about 1.50 million tonnes to about 1.52 million tonnes. The increase was mainly attributed to rise in recycling quantity of ferrous metals.

With the EPD expanding the community recycling network and strengthening various waste reduction and recovery measures, the quantities of electrical and electronic equipment, plastics, food waste and glass recycled locally increased year-on-year by about 3%, 6%, 10% and 13% respectively (Plate 3.11).

The quantity of ***plastic recyclables*** recycled locally rose from 119,900 tonnes in 2022 to 126,600 tonnes in 2023. The increase was attributed to the enhanced control of transboundary movements of plastic wastes under the amendment to the Basel Convention starting from 2021, and the tightening of import control by importing economies worldwide. The implementation of various new measures by the Hong

Kong government further promote waste plastic recovery, including extension of Pilot Scheme on Collection and Recycling Services of Plastic Recyclable Materials and launch of Stage 3 of Reverse Vending Machines (RVM) Pilot Scheme, leading to the gradual increase in local recycling quantity by the local recycling industry.

The quantity of ***food waste*** recycled locally increased from 71,800 tonnes in 2022 to 79,000 tonnes in 2023. Organic Resource Recovery Centre Phase 1 (O · PARK1) started to receive and process food waste in July 2018. Besides, the EPD in collaboration with Drainage Services Department has implemented the Food Waste/Sewage Sludge Anaerobic Co-digestion Trial Scheme at the Tai Po and Shatin Sewage Treatment Works in 2019 and 2023 respectively to treat food waste. In addition, the EPD is actively implementing various food waste collection measures to expand the food waste recycling network. These include expanding the Pilot Scheme on Food Waste Collection in 2021, launching the Food Waste Collection Scheme in Public Rental Housing Estates in 2022, rolling out funding schemes to subsidize private residential housing to implement food waste recycling, and setting up public food waste recycling points in suitable locations. All these measures are continuously driving food waste recycling.

The quantity of ***waste electrical and electronic equipment (WEEE)*** recycled locally rose from 46,500 tonnes in 2022 to 47,700 tonnes in 2023. The recyclable value of WEEE is relatively high which attracts local recyclers to actively engage in WEEE recovery. The full implementation of the producer responsibility scheme on WEEE in 2018 and the commissioning of the WEEE Treatment and Recycling Facility (WEEE · PARK) by the Government further promoted beneficial recycling and reuse of the regulated WEEE. Coupled with the continuous increase in the public's awareness of recycling of other WEEE, the recovery rate of WEEE remained high.

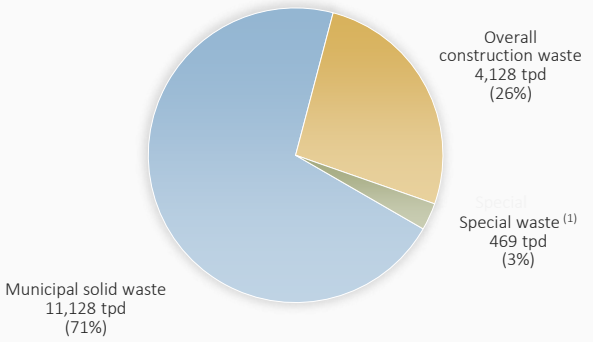
Plate 2.1 Disposal of total solid waste at landfills in 2023 - By main waste category

Waste category [1]		Average daily quantity (tpd) and year-on-year growth rate [3]	
a.	Municipal solid waste	10,884	(-2.2%)
	(i) Domestic waste	6,731	(-1.0%)
	(ii) Commercial and industrial waste	4,153	(-4.1%)
b.	Overall construction waste	4,428	(7.3%)
c.	Special waste [2]	471	(0.6%)
d.	Total waste received at landfills (a + b + c)	15,783	(0.4%)

Notes :

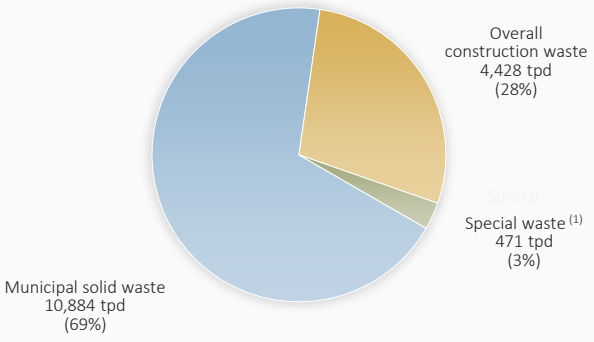
1. Please refer to Appendix 1 for the classification of solid waste.
2. The quantity does not include special waste not disposed of at landfills.
3. Figures in brackets refer to year-on-year (y-o-y) growth rates.

Plate 2.2 Disposal of total solid waste at landfills in 2022 and 2023 - By main waste category



Total disposal : 15,725 tpd

2022



Total disposal : 15,783 tpd

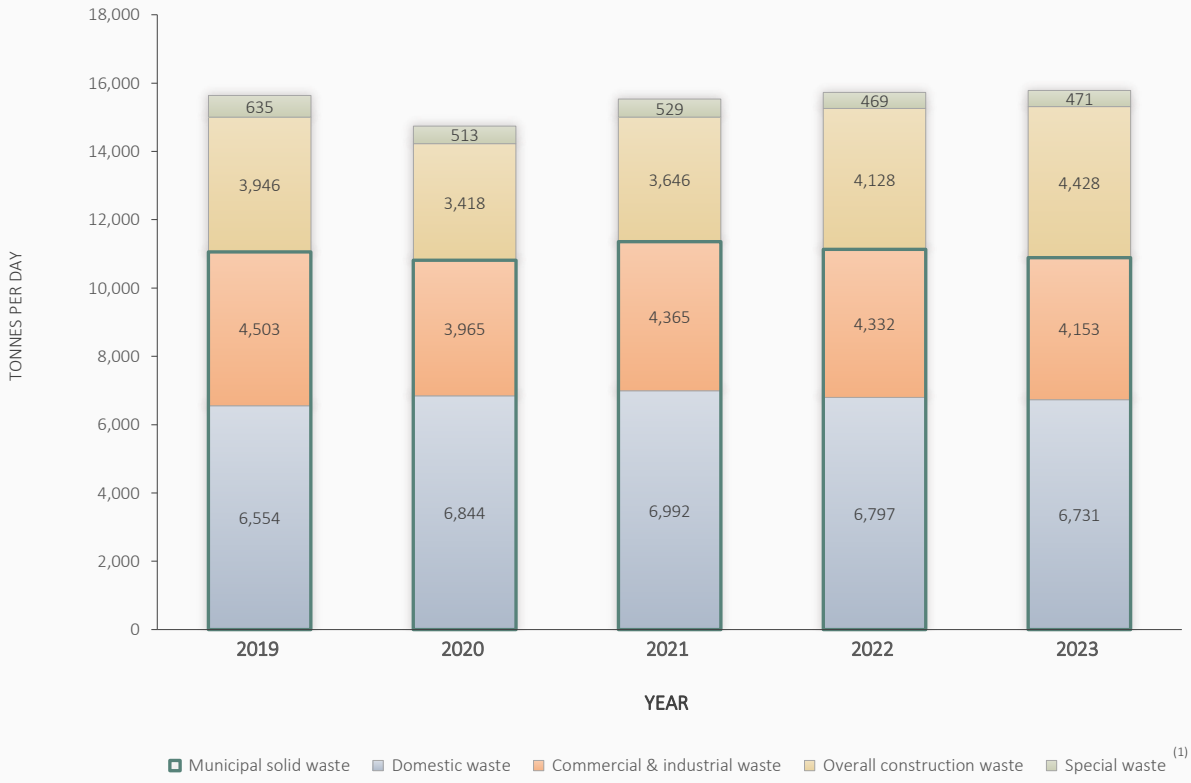
2023

Note :

1. The quantity does not include special waste not disposed of at landfills.

Plate 2.3 Disposal of total solid waste at landfills from 2019 to 2023 - By main waste category

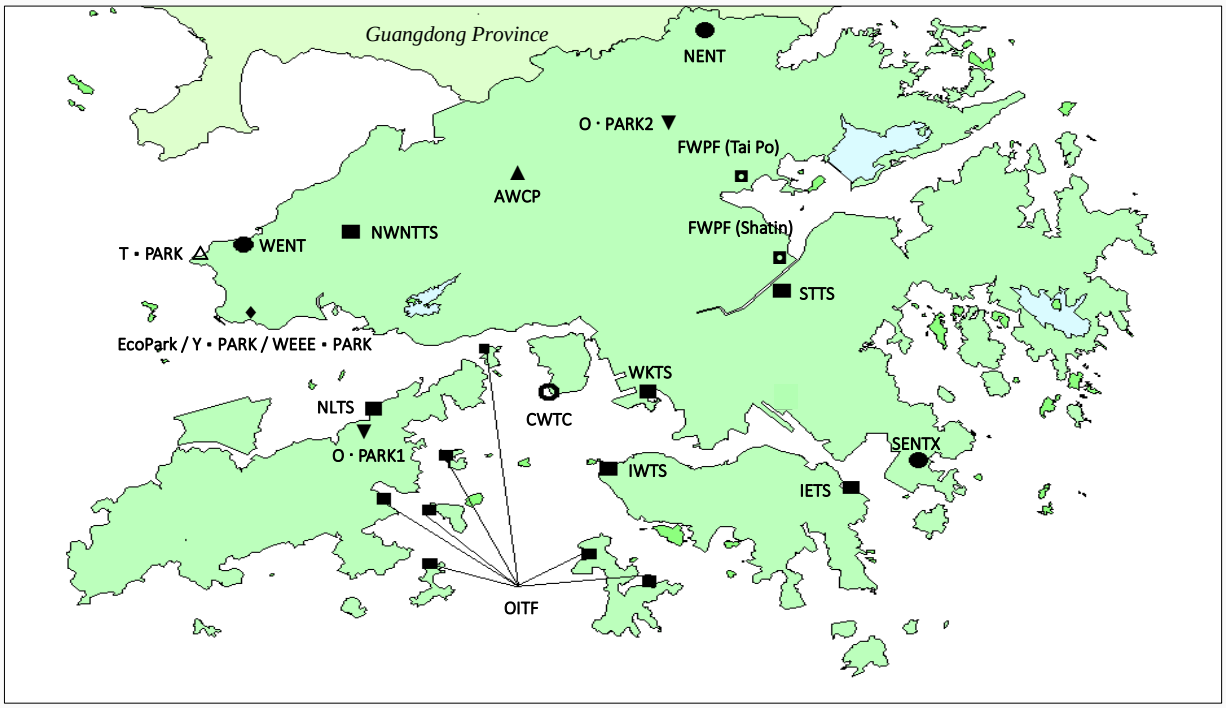
Total disposal (tpd)	15,637	14,739	15,533	15,725	15,783
y-o-y change (%)	-2.8	-5.7	5.4	1.2	0.4



Note :

1. The quantity does not include special waste not disposed of at landfills.

Plate 2.4 Waste management facilities in Hong Kong



Landfill	●	WENT	- West New Territories Landfill
		SENTX	- South East New Territories Landfill Extension (1)
		NENT	- North East New Territories Landfill
RTS	■	IETS	- Island East Transfer Station (2)
		IWTS	- Island West Transfer Station (2)
		WKTS	- West Kowloon Transfer Station (2)
		OITF	- Outlying Islands Transfer Facilities (2)
		NLTS	- North Lantau Transfer Station (2)
		STTS	- Shatin Transfer Station (3)
		NWNTTS	- North West New Territories Transfer Station (3)
Waste treatment / recycling facilities	O	CWTC	- Chemical Waste Treatment Centre
	▲	AWCP	- Animal Waste Composting Plant
	◆	EcoPark / Y ▪ PARK (4) / WEEE Treatment and Recycling Facility (WEEE ▪ PARK)	
	▼	Organic Resources Recovery Centre (O · PARK) (5)	
	△	Sludge Treatment Facility (T ▪ PARK) (6)	
	◘	Food Waste Pre-Treatment Facilities under Food Waste / Sewage Sludge Anaerobic Co-digestion Trial Scheme	

Notes :

1. From 21 November 2021 onwards, SENTX has replaced SENT to accept C&D waste.
2. Waste from IETS, IWTS, WKTS, OITF and NLTS was transferred to WENT by sea.
3. Waste from STTS and NWNTTS was transferred to NENT by road.
4. From June 2021 onwards, Y ▪ PARK has commenced operation to convert suitable yard waste into various recyclable products such as wood chips, wood boards and wood beam through the processes of sorting, cutting, shredding, etc.
5. O · PARK1 at Siu Ho Wan and O · PARK2 at Sha Ling have commenced operation in July 2018 and March 2024 respectively to convert food waste into biogas for electricity generation whilst the residues from the process be produced as compost for landscaping and horiculture use.
6. From April 2015 onwards, dewatered sewage sludge from major sewage treatment works managed by Drainage Services Department has been treated by incineration at T ▪ PARK, and the residue and ash of incineration have been disposed of at WENT.

Plate 2.5 Total solid waste received by disposal facilities in 2023 - By main waste category

Disposal facility	Average daily quantity (tpd) and year-on-year growth rate [4]							
	Municipal solid waste		Overall construction waste		Special waste [1]		All waste categories	
RTS								
IETS - Island East Transfer Station	1,246	(5.7%)	-	-	-	-	1,246	(5.7%)
IWTS - Island West Transfer Station	992	(-6.2%)	-	-	-	-	992	(-6.2%)
WKTS - West Kowloon Transfer Station	2,427	(-0.3%)	-	-	478	(1.9%)	2,905	(0.0%)
OITF - Outlying Islands Transfer Facilities	80	(-5.7%)	49	(65.9%)	3	(-1.9%)	132	(12.3%)
NLTS - North Lantau Transfer Station	689	(9.4%)	-	-	0	(242.5%)	690	(9.4%)
STTS - Shatin Transfer Station	1,844	(0.5%)	-	-	-	-	1,844	(0.5%)
NWNTTS - North West New Territories Transfer Station	1,330	(-2.6%)	-	-	-	-	1,330	(-2.6%)
Landfill								
WENT - West New Territories Landfill [2]	5,950	(0.3%)	289	(-23.8%)	357	(4.3%)	6,596	(-0.9%)
SENTX - South East New Territories Landfill Extension [3]	-	-	2,804	(12.0%)	-	-	2,804	(12.0%)
NENT - North East New Territories Landfill [2]	4,934	(-5.0%)	1,335	(7.2%)	114	(-9.5%)	6,383	(-2.8%)
All landfills	**10,884**	**(-2.2%)**	**4,428**	**(7.3%)**	**471**	**(0.6%)**	**15,783**	**(0.4%)**

Notes :

1. Please refer to Plate 2.13b for special waste not disposed of at landfills.
2. Solid waste delivered to RTSs will be transferred to specified landfills after compression. The quantities include solid waste directly delivered to landfills and those transferred from RTSs to landfills.
3. From 21 November 2021 onwards, SENTX has replaced SENT Landfill to accept C&D waste.
4. Figure less than 0.5 tpd is shown as 0. Figures in brackets refer to year-on-year (y-o-y) growth rates.

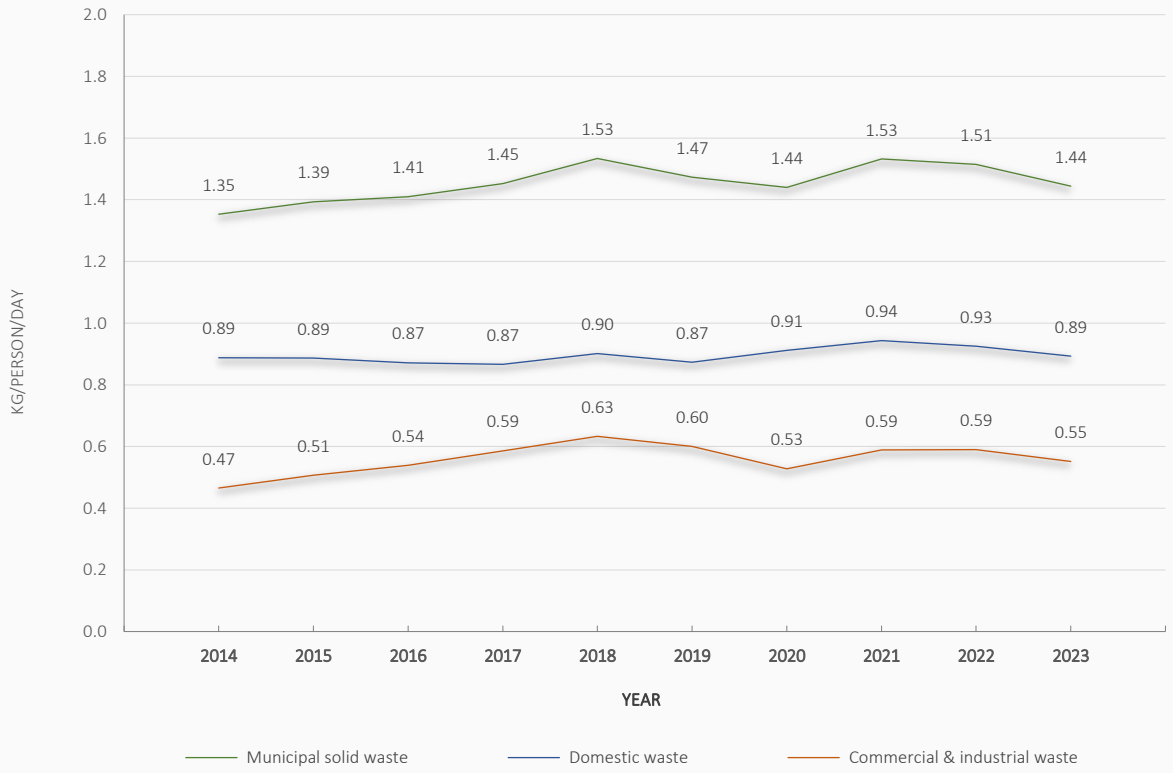
Plate 2.6 Arisings of solid waste disposed of at landfills in 2023 - By district and main waste category

District [3]	Average daily quantity [1] [2] (tpd)			
	Domestic waste (a)	Commercial & industrial waste (b)	Municipal solid waste (c) = (a) + (b)	Overall construction waste (d)
Central & Western	289	225	514	91
Eastern	485	117	603	62
Southern	218	49	267	87
Wan Chai	223	37	260	101
Hong Kong Island	**1,216**	**428**	**1,644**	**340**
Kowloon City	282	85	367	326
Kwun Tong	498	154	651	339
Sham Shui Po	367	118	485	89
Wong Tai Sin	292	50	342	54
Yau Tsim Mong	543	316	859	149
Kowloon	**1,982**	**723**	**2,704**	**957**
Kwai Tsing	326	373	699	242
North	392	521	912	213
Sai Kung	346	52	398	1,224
Shatin	467	597	1,064	151
Tai Po	299	212	510	183
Tsuen Wan	252	283	535	45
Tuen Mun	535	251	786	561
Yuen Long	730	551	1,281	233
NT – Except Outlying Islands	**3,347**	**2,840**	**6,187**	**2,851**
Cheung Chau	29	0	29	-
Hei Ling Chau	2	0	2	-
Lamma Island	9	0	9	-
Ma Wan	17	0	17	-
Mui Wo	21	0	21	-
Lantau [5]	103	163	266	-
Peng Chau	6	0	6	-
NT – Outlying Islands	**187**	**163**	**350**	**279 [4]**
All districts	**6,731**	**4,153**	**10,884**	**4,428**

Notes :

1. The geographical distribution of solid waste arisings is mainly estimated from waste intake records taken at waste treatment facilities and should be regarded as indicative reference only.
2. Special waste is not included.
3. Districts under each main region are sorted in alphabetical order.
4. Breakdown into individual islands / areas is not available.
5. Mui Wo is not included.

Plate 2.7 Per capita disposal rates [(1)] of MSW, domestic waste and commercial & industrial waste from 2014 to 2023



Note :

1. The per capita disposal rates are calculated based on the mid-year population data for the respective years according to the latest estimates released by the C&SD in August 2024.

Plate 2.8 Composition of MSW disposed of at landfills in 2023 - By waste type

Composition	Average daily quantity (tpd) and percentage share by weight [3]					
	Domestic waste (a)		Commercial & industrial waste (b)		Municipal solid waste (c) = (a) + (b)	
Glass	142	(2.1%)	78	(1.9%)	220	(2.0%)
Metals	132	(2.0%)	92	(2.2%)	224	(2.1%)
Paper	1,366	(20.3%)	806	(19.4%)	2,171	(19.9%)
Plastics	1,311	(19.5%)	809	(19.5%)	2,120	(19.5%)
Putrescibles	2,159	(32.1%)	1,260	(30.3%)	3,419	(31.4%)
Textiles	245	(3.6%)	157	(3.8%)	402	(3.7%)
Wood	38	(0.6%)	176	(4.2%)	214	(2.0%)
Household hazardous wastes (HHWs) [1]	121	(1.8%)	47	(1.1%)	168	(1.5%)
Others [2]	1,218	(18.1%)	729	(17.5%)	1,947	(17.9%)
Total	**6,731**	**(100.0%)**	**4,153**	**(100.0%)**	**10,884**	**(100.0%)**

Notes :

1. Household hazardous wastes (HHWs) include paints, pesticides, fuels, cylinders, batteries, electrical appliances, fluorescent lamps and medicines, etc.
2. Others include bulky items and other miscellaneous waste materials.
3. Figures in brackets refer to percentage shares by weight in total disposal quantity of the corresponding waste type.

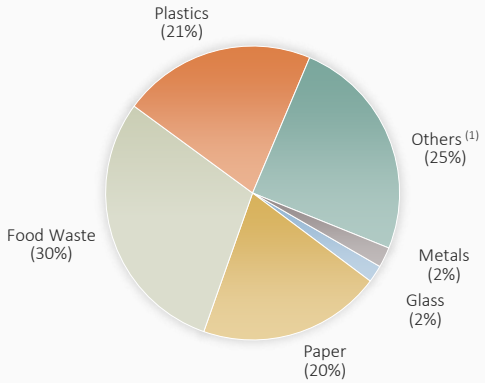
Plate 2.9 Composition of MSW disposed of at landfills in 2023 - By major waste type

Composition [1]	Average daily quantity (tpd) and percentage share by weight [4]					
	Domestic waste (a)		Commercial & industrial waste (b)		Municipal solid waste (c) = (a) + (b)	
Glass						
- Glass bottles	116	(1.7%)	70	(1.7%)	186	(1.7%)
- Other glass	26	(0.4%)	8	(0.2%)	34	(0.3%)
Glass sub-total	**142**	**(2.1%)**	**78**	**(1.9%)**	**220**	**(2.0%)**
Metals						
- Ferrous metals	89	(1.3%)	65	(1.6%)	154	(1.4%)
- Non-ferrous metals	42	(0.6%)	28	(0.7%)	70	(0.6%)
Metals sub-total	**132**	**(2.0%)**	**92**	**(2.2%)**	**224**	**(2.1%)**
Paper						
- Cardboard / Newsprint / Office paper	359	(5.3%)	242	(5.8%)	601	(5.5%)
- Tetrapak	55	(0.8%)	25	(0.6%)	80	(0.7%)
- Others [2]	952	(14.1%)	538	(13.0%)	1,490	(13.7%)
Paper sub-total	**1,366**	**(20.3%)**	**806**	**(19.4%)**	**2,171**	**(19.9%)**
Plastics						
- Plastic bags	549	(8.2%)	317	(7.6%)	867	(8.0%)
- Plastic bottles	132	(2.0%)	67	(1.6%)	199	(1.8%)
- Plastic / Polyfoam dining wares	158	(2.3%)	85	(2.0%)	243	(2.2%)
- Others [3]	471	(7.0%)	340	(8.2%)	811	(7.5%)
Plastics sub-total	**1,311**	**(19.5%)**	**809**	**(19.5%)**	**2,120**	**(19.5%)**
Putrescibles						
- Food waste	2,021	(30.0%)	1,170	(28.2%)	3,191	(29.3%)
- Yard waste	138	(2.0%)	90	(2.2%)	228	(2.1%)
Putrescibles sub-total	**2,159**	**(32.1%)**	**1,260**	**(30.3%)**	**3,419**	**(31.4%)**

Notes :

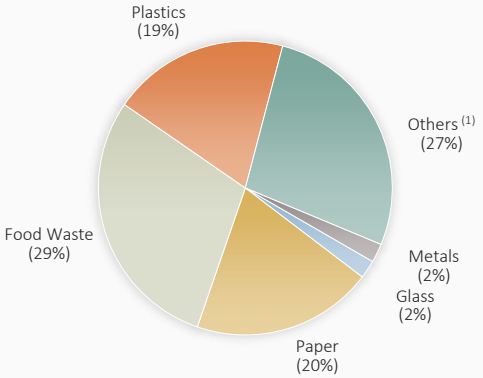
1. The waste classification was simplified starting from 2020 by making reference to practices of other economies and grouping waste types with similar natures to enhance the precision of estimation.
2. Other paper waste includes tissue paper, paper bags, paper dining wares, etc.
3. Other plastics waste includes transparent stretch film for packaging, polyfoam packaging, toys, buckets, plastic board, scrap, etc.
4. Figures in brackets refer to percentage shares by weight in total disposal quantity of the corresponding waste type.

Plate 2.10 Composition of MSW disposed of at landfills in percentages in 2022 and 2023 - By major waste type



Total disposal : 11,128 tpd

2022



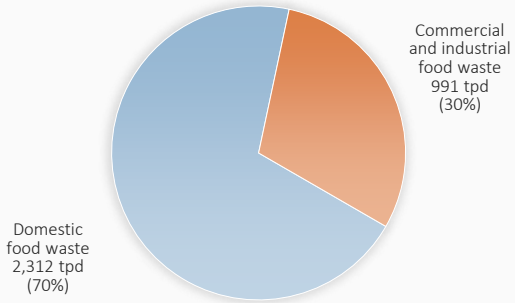
Total disposal : 10,884 tpd

2023

Note :

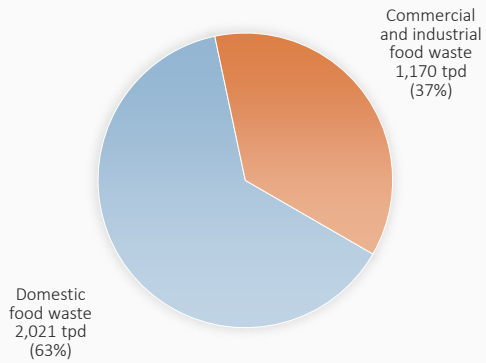
1. Others include textiles, wood, yard waste, household hazardous wastes, bulky items and miscellaneous waste materials.

Plate 2.11 Composition of municipal food waste disposed of at landfills in 2022 and 2023 - By waste category



Municipal food waste disposal : 3,302 tpd (30% of MSW)

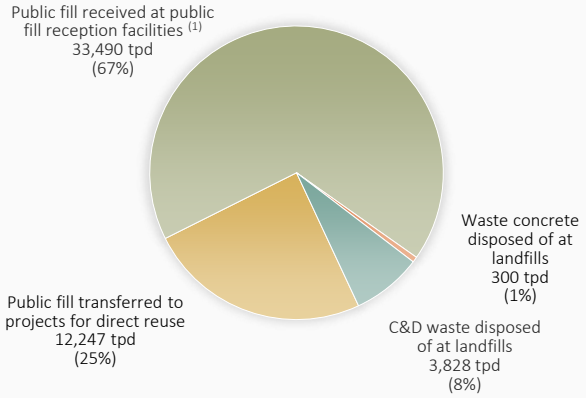
2022



Municipal food waste disposal : 3,191 tpd (29% of MSW)

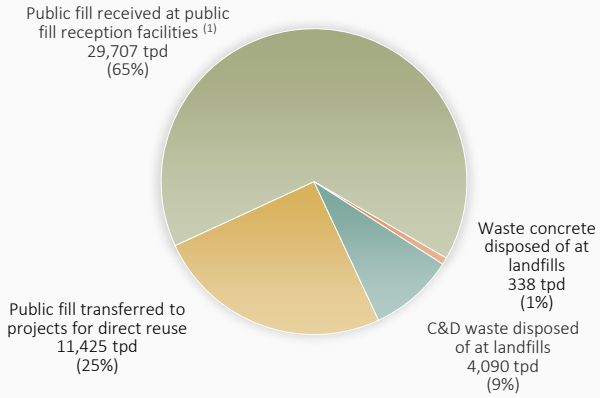
2023

Plate 2.12 Disposal and reuse of overall construction waste in 2022 and 2023



Total generation : 49,865 tpd

2022



Total generation : 45,560 tpd

2023

Note :

1. Public fill reception facilities (PFRFs) are managed by CEDD for receiving inert construction waste (also known as public fill) appropriate for reuse. At present, four PFRFs are in operation, namely Tseung Kwan O Area 137 Fill Bank, Tuen Mun Area 38 Fill Bank, Chai Wan Public Fill Barging Point and Mui Wo Temporary Public Fill Reception Facility

Plate 2.13a Disposal of special waste at landfills in 2023 - By special waste type

Special waste type	Average daily quantity [1] (tpd)	and year-on-year growth rate [7]
Abattoir waste	10	(9.4%)
Animal carcasses and kennel waste	17	(170.9%)
Asbestos waste	3	(18.5%)
Chemical waste other than asbestos waste	4	(-10.7%)
Clinical waste (with package material) [2]	2	(-54.7%)
Dewatered dredged materials	0	(-100.0%)
Dewatered sludges [3]	30	(-11.2%)
Dewatered waterworks sludge	82	(-5.4%)
Incineration ash and stabilised residue	146	(12.6%)
Livestock waste [4]	67	(-11.5%)
Sewage works screenings	58	(8.3%)
Waste tyres [5]	41	(-13.3%)
Others [6]	12	(-22.1%)
All special waste disposed at landfills	**471**	**(0.6%)**

Notes :

1. Some types of special waste may not arise and be disposed of daily throughout the whole year. The average daily quantity is obtained by dividing the total amount of waste disposed of at landfills in the whole year by the number of days in the whole year.
2. Clinical waste is incinerated at CWTC except during normal maintenance or emergency shut-down maintenance of the incineration treatment system for more than two days. During the shutdown, clinical waste is packed and transferred to designated landfill for disposal in accordance with the Clinical Waste Disposal License of CWTC.
3. Dewatered sludges include dewatered sludges and other sludges from industrial activities. Dewatered sludges originate from sewage treatment works managed by the Drainage Services Department, wastewater treatment facilities and grease trap waste treatment facility at refuse transfer stations managed by the EPD, and private sewage treatment plants. Except that dewatered sewage sludge from major sewage treatment works managed by Drainage Services Department is treated by incineration at T • PARK, other sludges are disposed of at WENT and NENT Landfills.
4. In 2023, the generation of livestock waste amounted to 160 tpd, out of which 67 tpd were disposed of at landfills. Livestock waste disposed of at landfills mainly include the livestock waste collected by the free collection service for solid livestock waste provided to local livestock farmers by the Government. The remaining livestock waste was treated by other environmentally-acceptable means such as on-site composting, aerobic treatment, and dry muck-out.
5. Waste tyres are shredded or cut prior to disposal at landfills.
6. Others include condemned goods, contaminated waste and government items.
7. Figures in brackets refer to year-on-year (y-o-y) growth rates. It should be noted that special waste types with small tpd figures may be subject to strong y-o-y fluctuations due to small base numbers.

Plate 2.13b Treatment of special waste not disposed of at landfills in 2023 - By special waste type

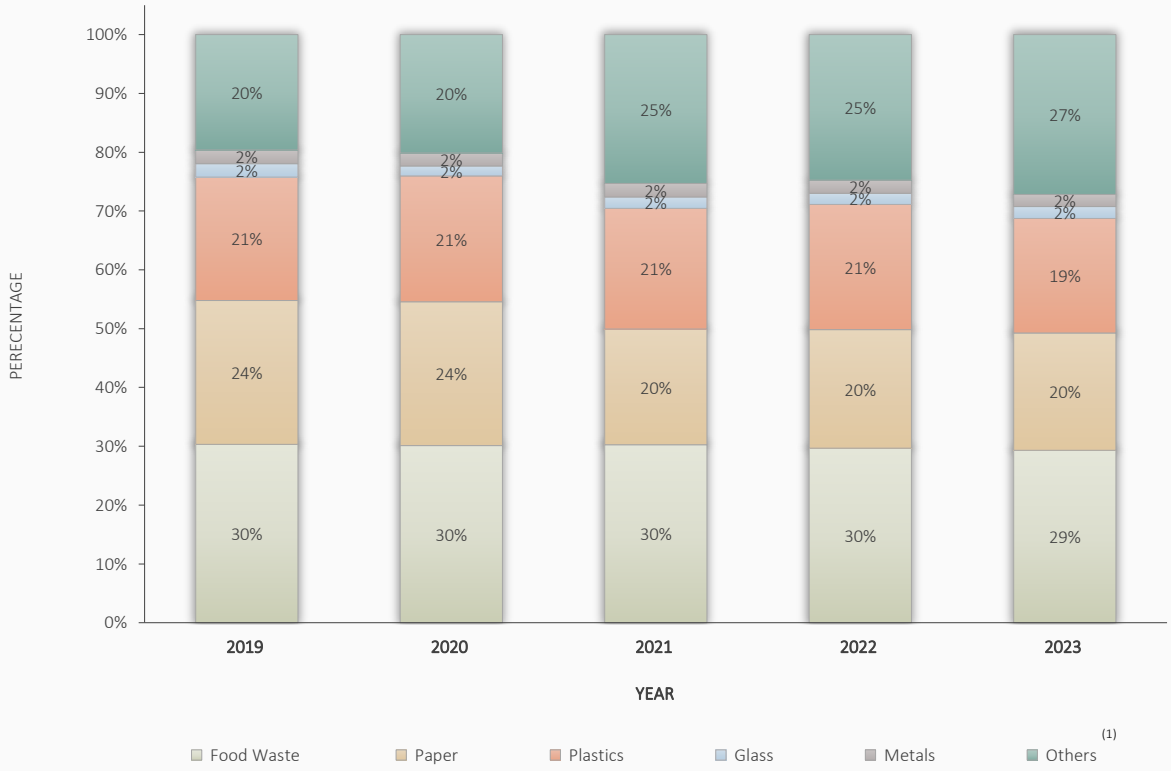
Special waste type	Treatment method	Average daily quantity [1] (tpd) and year-on-year growth rate [6]	
Chemical waste other than asbestos waste	CWTC	20	(-8.9%)
Clinical waste	CWTC	6	(-46.1%)
Grease trap waste	WKTS [2]	478	(1.9%)
Horse stable waste	AWCP	22	(-12.9%)
Dredged mud and excavated materials	Marine dumping [3]	5,753	(10.5%)
Dewatered sewage sludge [4]	Incineration at T • PARK	1,116	(5.5%)
Furnace bottom ash	Concrete manufacturing, stored in lagoon [5]	57	(-3.2%)
Pulverised fuel ash	Concrete manufacturing, stored in lagoon [5]	625	(-5.7%)

Notes :

1. Some types of special waste may not arise and be treated daily throughout the whole year. The average daily quantity is obtained by dividing the total amount of waste treated outside landfills in the whole year by the number of days in the whole year.
2. The figure is the quantity of grease trap waste treated by the Grease Trap Waste Treatment Facility at WKTS.
3. The density of the dredged mud and excavated materials is assumed to be one tonne per cubic metre.
4. Dewatered sewage sludge from major sewage treatment works managed by Drainage Services Department has been treated by incineration at T • PARK from April 2015 onwards.
5. Furnace bottom ash and pulverised fuel ash are wastes resulting from coal-fired electricity generation. Their figures are provided by the Power Companies.
6. Figures in brackets refer to year-on-year (y-o-y) growth rates. It should be noted that special waste types with small tpd figures may be subject to strong y-o-y fluctuations due to small base numbers.

Plate 2.14 Composition of MSW disposed of at landfills in percentages from 2019 to 2023 - By major waste type

Total disposal (tpd)	11,057	10,809	11,358	11,128	10,884
y-o-y change (%)	-3.2	-2.2	5.1	-2.0	-2.2

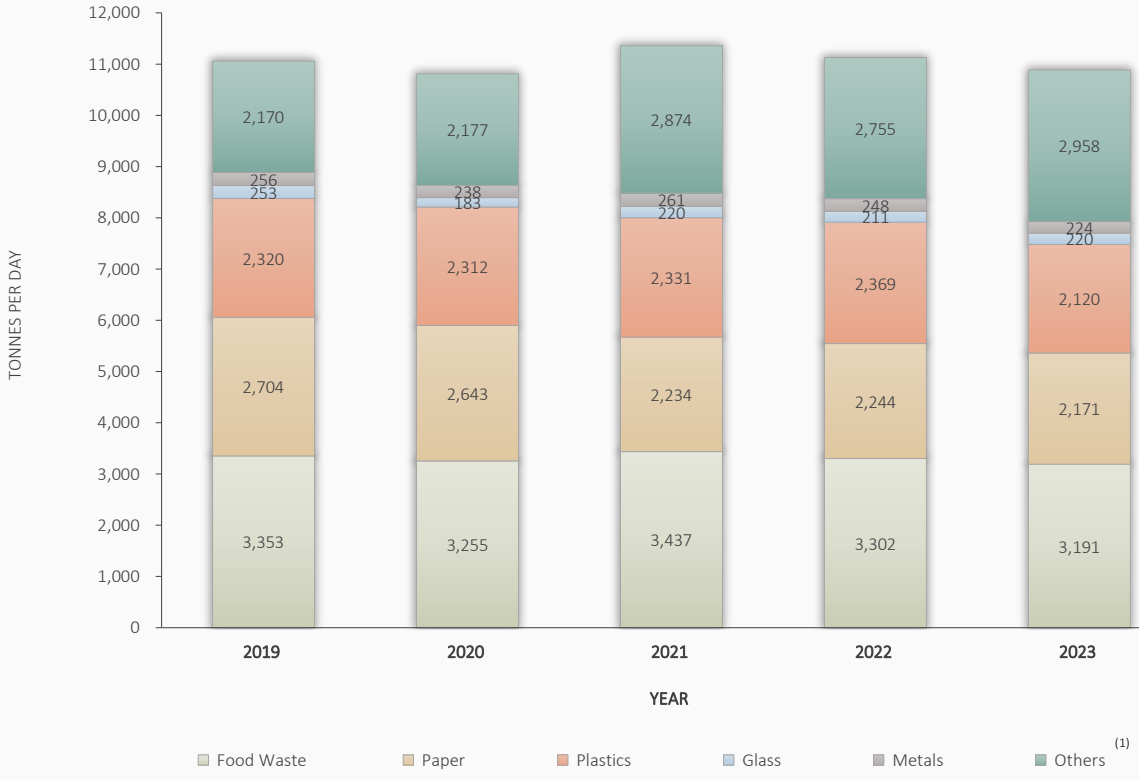


Note :

1. Others include textiles, wood, yard waste, household hazardous wastes, bulky items and miscellaneous waste materials.

Plate 2.15 Composition of MSW disposed of at landfills in quantities from 2019 to 2023 - By major waste type

Total disposal (tpd)	11,057	10,809	11,358	11,128	10,884
y-o-y change (%)	-3.2	-2.2	5.1	-2.0	-2.2

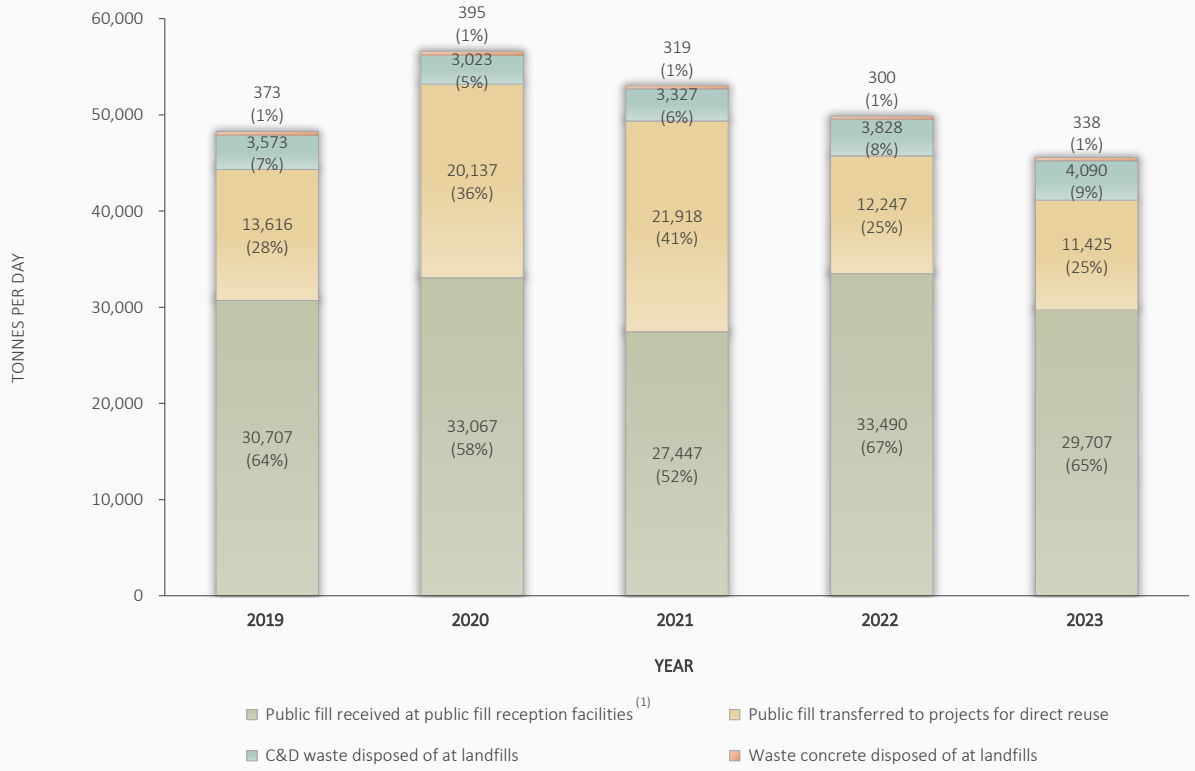


Note :

1. Others include textiles, wood, yard waste, household hazardous wastes, bulky items and miscellaneous waste materials.

Plate 2.16 Disposal and reuse of overall construction waste from 2019 to 2023

Total generation (tpd)	48,269	56,622	53,011	49,865	45,560
y-o-y change (%)	-2.7	17.3	-6.4	-5.9	-8.6



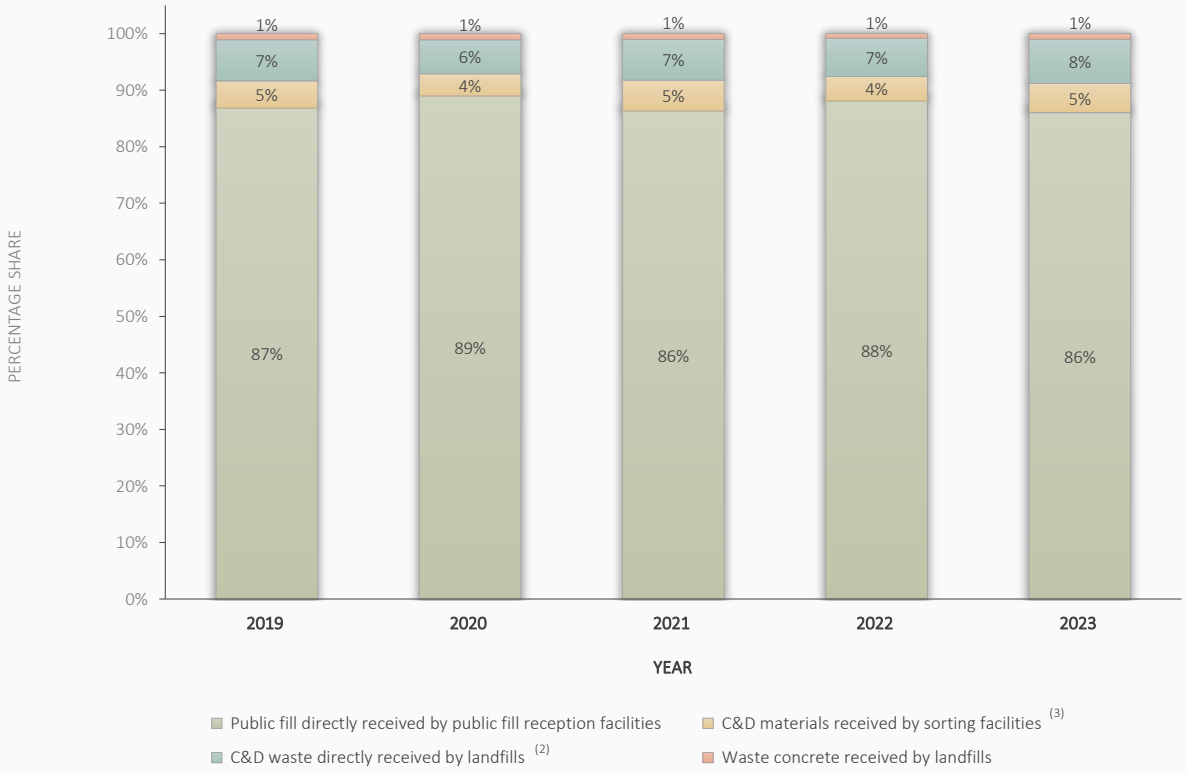
Notes :

1. Public fill reception facilities (PFRFs) are managed by CEDD for receiving inert construction waste (also known as public fill) appropriate for reuse. At present, four PFRFs are in operation, namely Tseung Kwan O Area 137 Fill Bank, Tuen Mun Area 38 Fill Bank, Chai Wan Public Fill Barging Point and Mui Wo Temporary Public Fill Reception Facility.
2. Figures in brackets refer to percentage shares by weight.

Plate 2.17 Overall construction waste received by treatment facilities [1] from 2019 to 2023

Unit : tpd

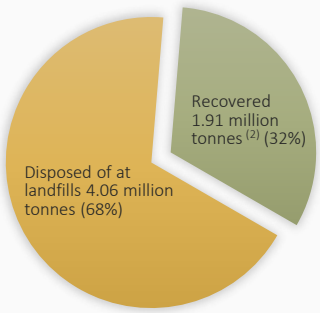
Public fill reception facilities	30,081	32,536	26,782	33,112	29,292
Sorting facilities	1,670	1,439	1,699	1,638	1,754
Landfills	2,894	2,592	2,548	2,845	2,998
Waste concrete	*373*	*395*	*319*	*300*	*338*
C&D waste	*2,522*	*2,197*	*2,230*	*2,545*	*2,660*



Notes :

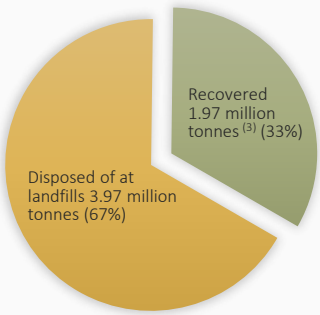
1. Under the Construction Waste Disposal Charging Scheme, 71 dollars is charged per tonne of public fill disposed of at public fill reception facilities, 175 dollars per tonne of construction waste at sorting facilities and 200 dollars per tonne of construction waste at landfills.
2. C&D waste directly received by landfills excludes C&D waste from sorting facilities, but includes a small quantity of C&D waste from OITF.
3. After sorting, inert material will be transferred from sorting facilities to public fill banks, and non-inert C&D waste to landfills.

Plate 3.1 Generation, disposal and recovery of MSW in 2022 and 2023



Total generation (1) : 5.97 million tonnes

2022



Total generation (1) : 5.94 million tonnes

2023

Notes :

1. Generation of MSW is the sum of MSW disposed of at landfills and MSW recovered for recycling.
2. A total of 1.91 million tonnes of recyclables were recovered for recycling in 2022, of which, 1.50 million tonnes (78%) were delivered outside Hong Kong for recycling and 0.42 million tonnes (22%) recycled locally.
3. A total of 1.97 million tonnes of recyclables were recovered for recycling in 2023, of which, 1.52 million tonnes (77%) were delivered outside Hong Kong for recycling and 0.45 million tonnes (23%) recycled locally.

Plate 3.2 Recovery rates of MSW, domestic waste, and commercial & industrial waste from 2019 to 2023

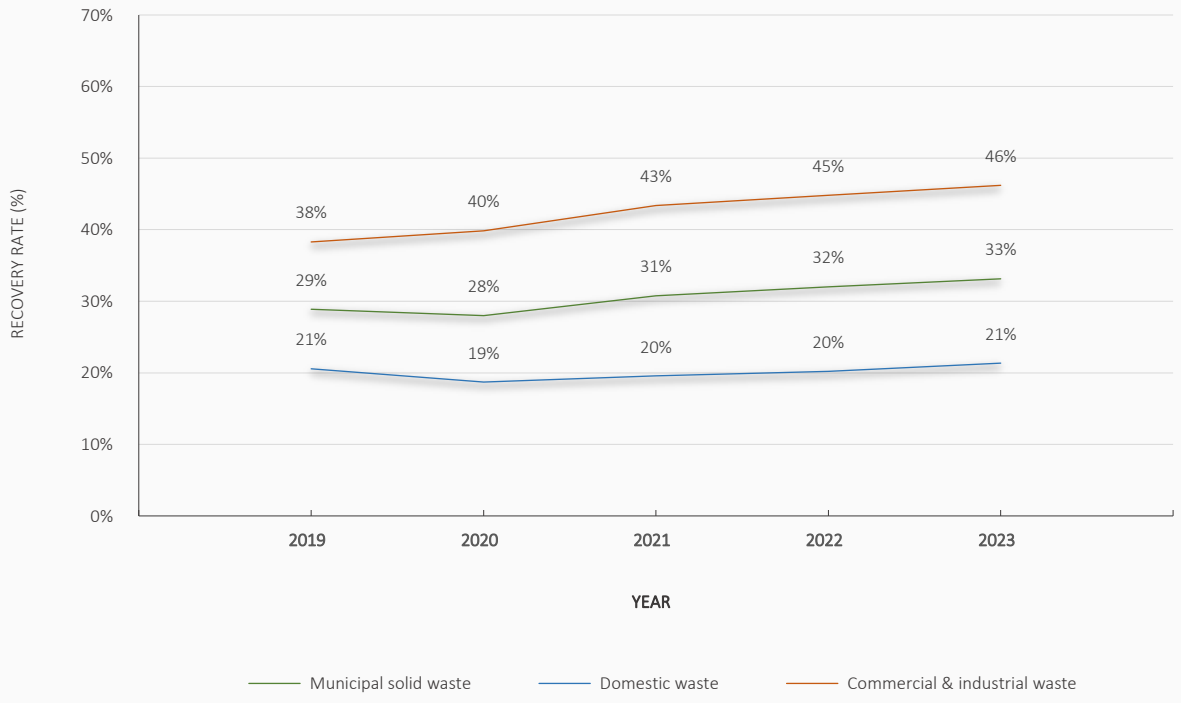


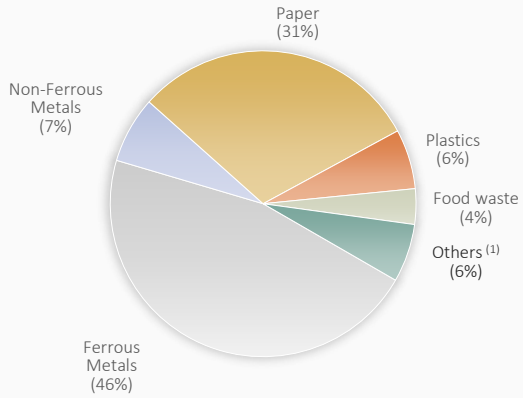
Plate 3.3 Recyclables recovered from MSW in 2023
- By type of recyclable

Recyclable type	Quantity of recovered recyclables (thousand tonnes) and percentage share by weight [6]					
	Delivered outside Hong Kong for recycling (a)		Recycled locally (b)		Total recovered for recycling (c) = (a) + (b)	
Paper	571.3	(37.6%)	3.1	(0.7%)	574.4	(29.2%)
Plastics	1.6	(0.1%)	126.6	(28.1%)	128.2	(6.5%)
Ferrous metals	834.5	(55.0%)	120.8	(26.9%)	955.2	(48.5%)
Non-ferrous metals	96.8	(6.4%)	3.8	(0.9%)	100.7	(5.1%)
Food waste [1]	0.0	(0.0%)	79.0	(17.6%)	79.0	(4.0%)
Glass [2]	0.0	(0.0%)	22.0	(4.9%)	22.0	(1.1%)
Textiles	8.6	(0.6%)	15.2	(3.4%)	23.8	(1.2%)
Wood	0.0	(0.0%)	6.5	(1.4%)	6.5	(0.3%)
Electrical and electronic equipment	1.1	(0.1%)	47.7	(10.6%)	48.8	(2.5%)
Yard waste [3]	0.0	(0.0%)	10.4	(2.3%)	10.4	(0.5%)
Others [4]	4.5	(0.3%)	14.8	(3.3%)	19.4	(1.0%)
Total	**1,518.5**	**(100.0%)**	**450.0**	**(100.0%)**	**1,968.5**	**(100.0%)**

Notes :

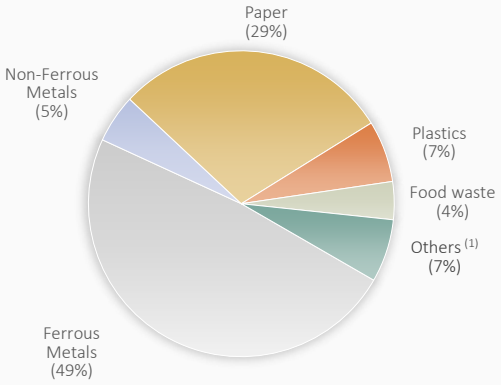
1. The quantity of food waste recycled locally includes those recycled by industrial operators, those recycled at O · PARK and OITF, and those recycled by non-government organizations.
2. Glass beverage bottles recovered for reuse through deposit-and-refund system operated by local beverage manufacturers are not included.
3. The quantity of yard waste recycled locally includes yard waste recycled on-site and off-site within Hong Kong and those recycled at Yard Waste Recycling Centre (Y · PARK).
4. The quantity includes rubber tyres, rechargeable battery and fluorescent lamps/tubes.
5. Figures less than 50 tonnes are shown as 0.0. Figures in brackets refer to percentage shares by weight.

Plate 3.4 Recyclables recovered from MSW in percentages in 2022 and 2023 - By type of recyclable



Total resource recovered : 1.91 million tonnes

2022



Total resource recovered : 1.97 million tonnes

2023

Note :

1. Others include glass, wood, rubber tyres, textiles, electrical and electronic equipment, yard waste, rechargeable battery and fluorescent lamps/tubes.

Plate 3.5 Quantities of recyclable materials recovered from MSW from 2019 to 2023

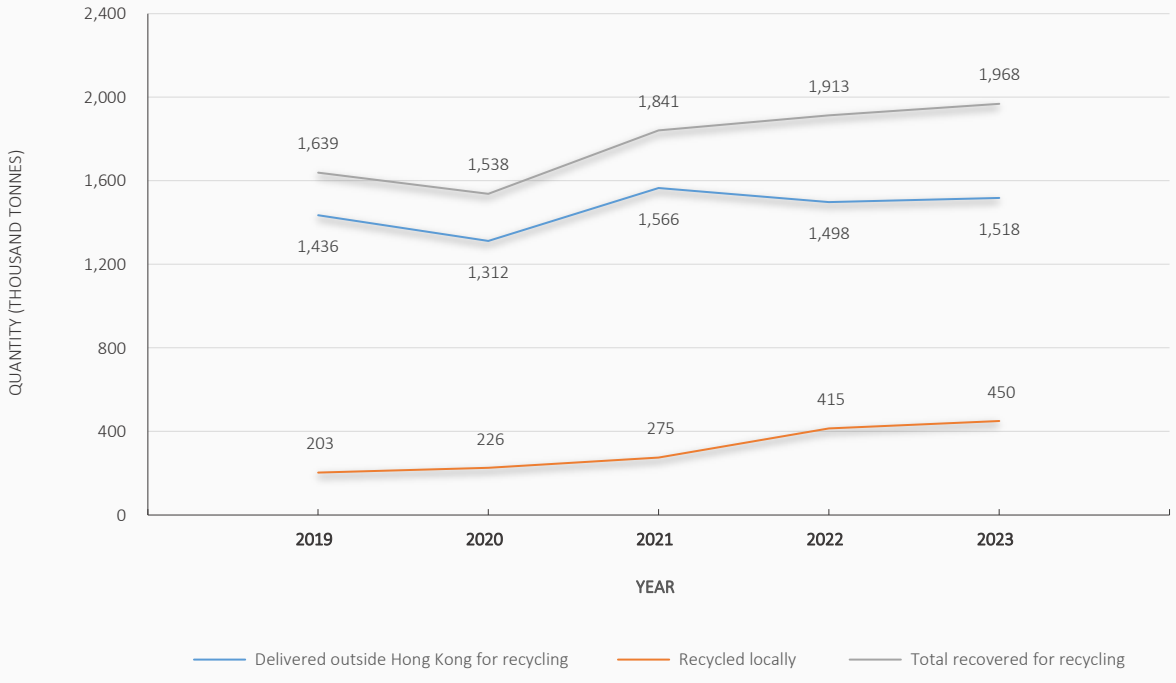


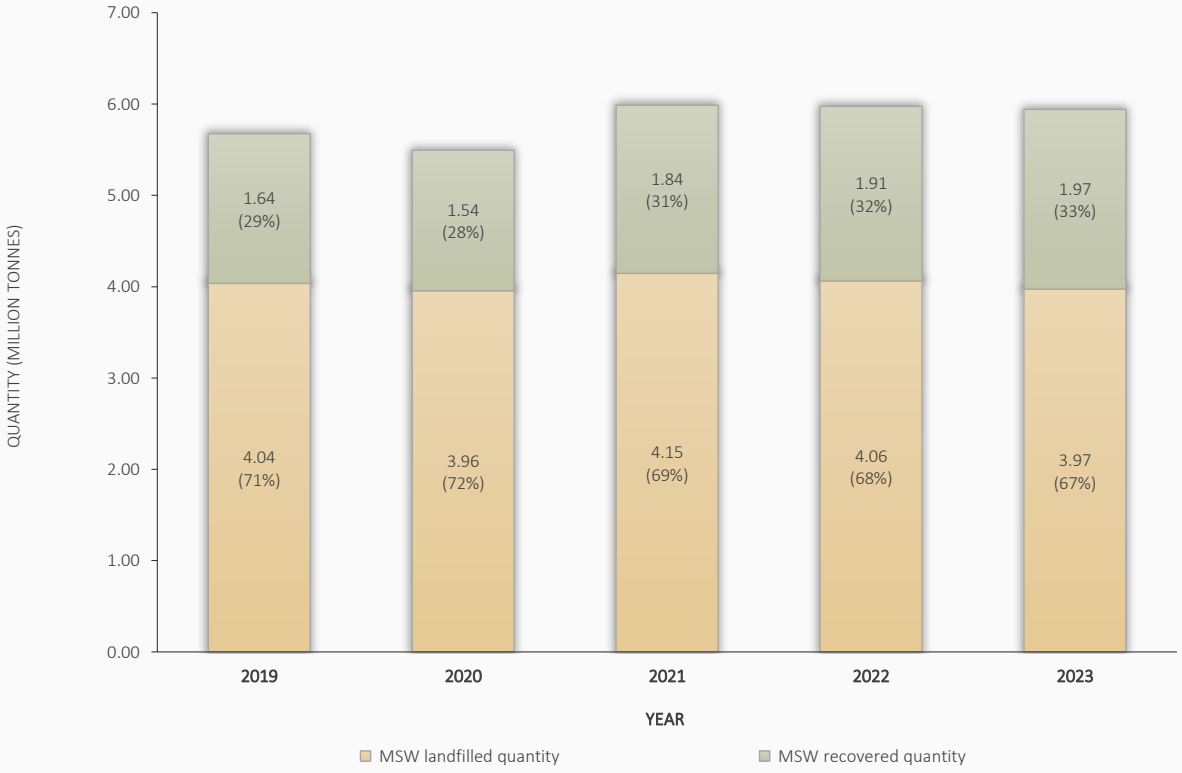
Plate 3.6 Recyclable materials recovered from MSW recycled outside Hong Kong in 2023 - By major type of recyclable material

Recyclable type	Quantity (thousand tonnes)	Value ($ thousand)	Value per unit weight ($ / tonne)
Ferrous metals	834.5	2,620,319	3,140
Non-ferrous metals	96.8	4,748,126	49,035
Plastics	1.6	4,161	2,606
Paper	571.3	850,139	1,488
Textiles	8.6	15,249	1,774

Source : Merchandise trade statistics from C&SD, supplemented by administrative records and survey results from EPD.

Plate 3.7 Generation, disposal and recovery of MSW from 2019 to 2023

Total generation (million tonnes)	5.67	5.49	5.99	5.97	5.94
y-o-y change (%)	-4.6	-3.2	9.0	-0.2	-0.6

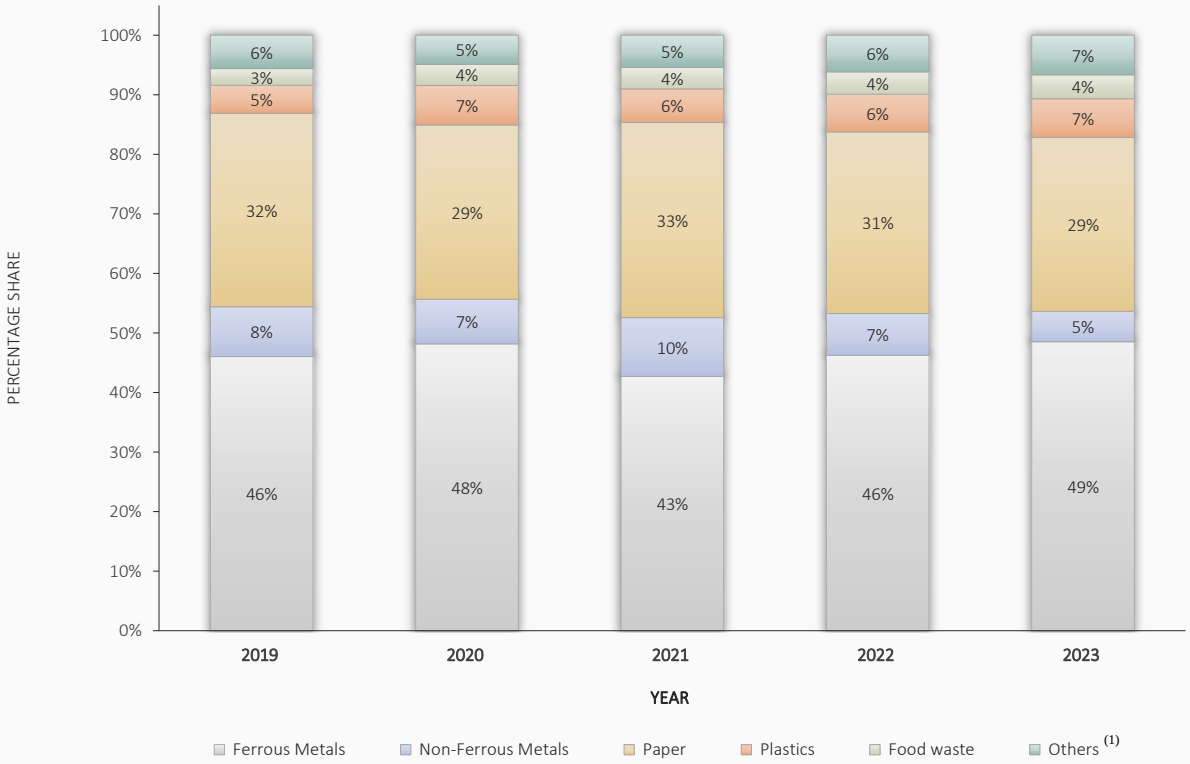


Note :

1. Generation of MSW is the sum of MSW disposed of at landfills and MSW recovered for recycling.

Plate 3.8 Recyclables recovered from MSW in percentages from 2019 to 2023
- By major type of recyclable

Total recovery (million tonnes)	1.64	1.54	1.84	1.91	1.97
y-o-y change (%)	-7.8	-6.2	19.7	3.9	2.9

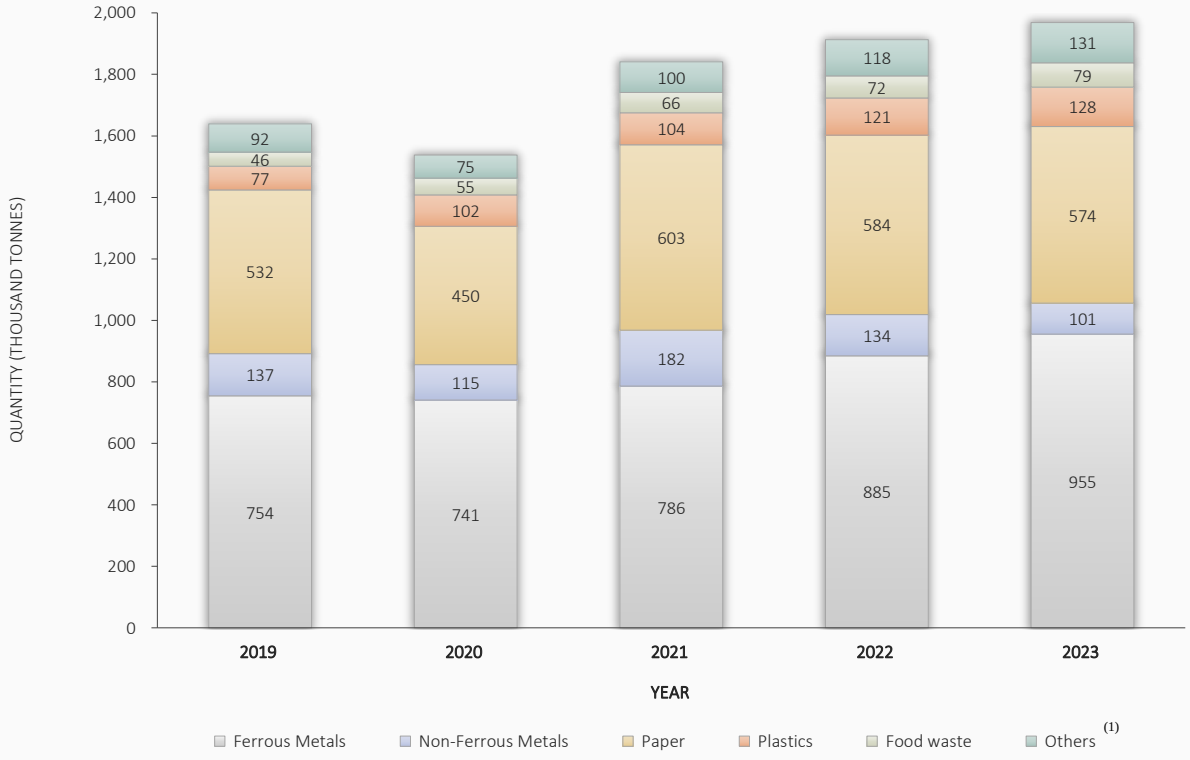


Note :

1. Others include glass, wood, rubber tyres, textiles, electrical and electronic equipment, yard waste, rechargeable battery and fluorescent lamps/tubes.

Plate 3.9 Recyclables recovered from MSW in quantities from 2019 to 2023
- By major type of recyclable

Total recovery (million tonnes)	1.64	1.54	1.84	1.91	1.97
y-o-y change (%)	-7.8	-6.2	19.7	3.9	2.9

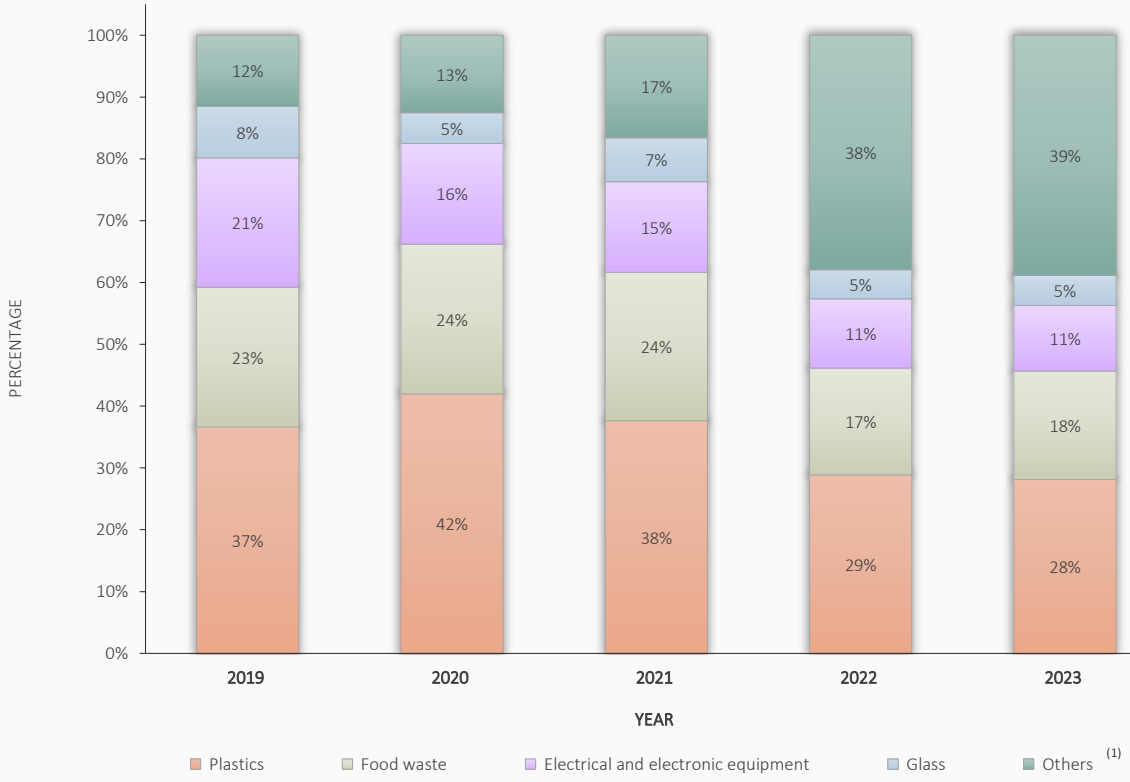


Note :

1. Others include glass, wood, rubber tyres, textiles, electrical and electronic equipment, yard waste, rechargeable battery and fluorescent lamps/tubes .

Plate 3.10 Recyclables recovered from MSW recycled locally in percentages from 2019 to 2023
- By major type of recyclable material

Total recyclables recycled locally (thousand tonnes)	203.1	225.6	275.3	415.2	450.0
y-o-y change (%)	40.2	11.1	22.0	50.8	8.4

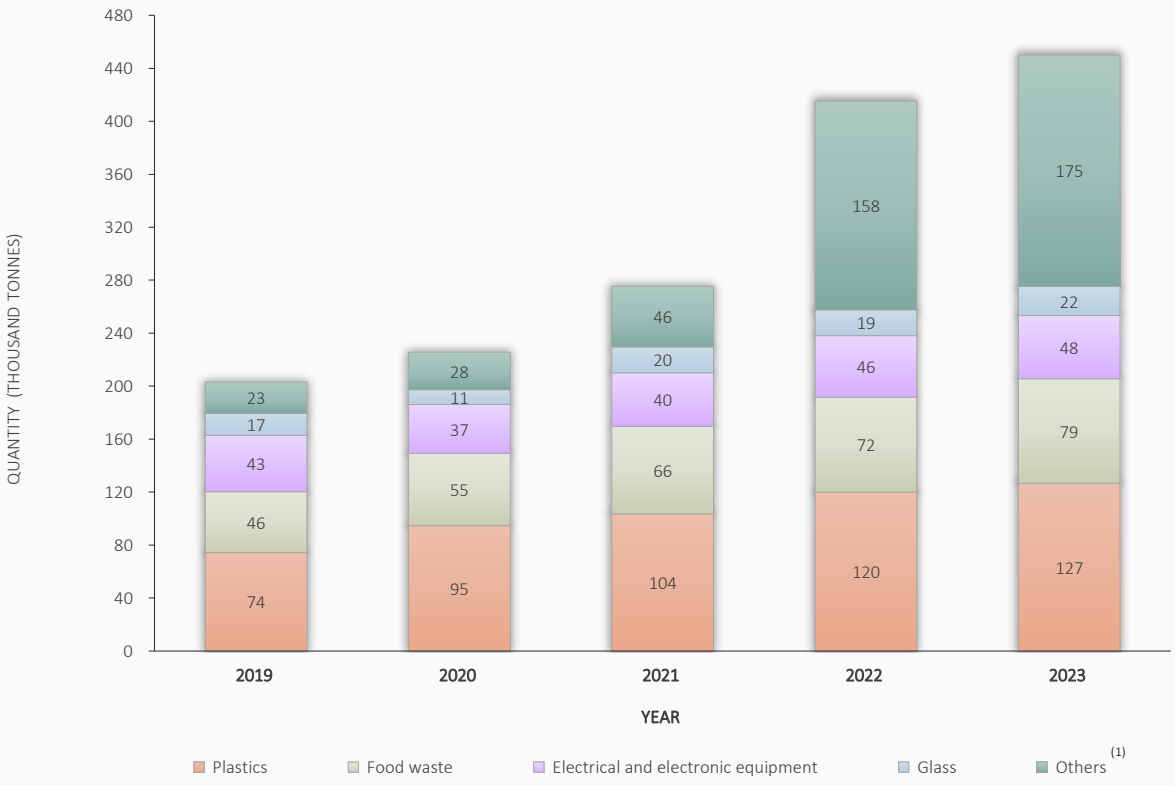


Note :

1. Others include paper, metals, wood, rubber tyres, textiles, yard waste, rechargeable battery and fluorescent lamps/tubes.

Plate 3.11 Recyclables recovered from MSW recycled locally in quantities from 2019 to 2023
- By major type of recyclable material

Total recyclables recycled locally (thousand tonnes)	203.1	225.6	275.3	415.2	450.0
y-o-y change (%)	40.2	11.1	22.0	50.8	8.4



Note :

1. Others include paper, metals, wood, rubber tyres, textiles, yard waste, rechargeable battery and fluorescent lamps/tubes.

Waste Classification and Terminology

Solid waste is classified into three main categories by making reference to the sources of waste and the institutional arrangements for waste collection and disposal. These three main categories of solid waste are municipal solid waste, overall construction waste and special waste. The detailed interpretations of some commonly used terms are described below.

Municipal solid waste includes domestic waste, and commercial and industrial waste.

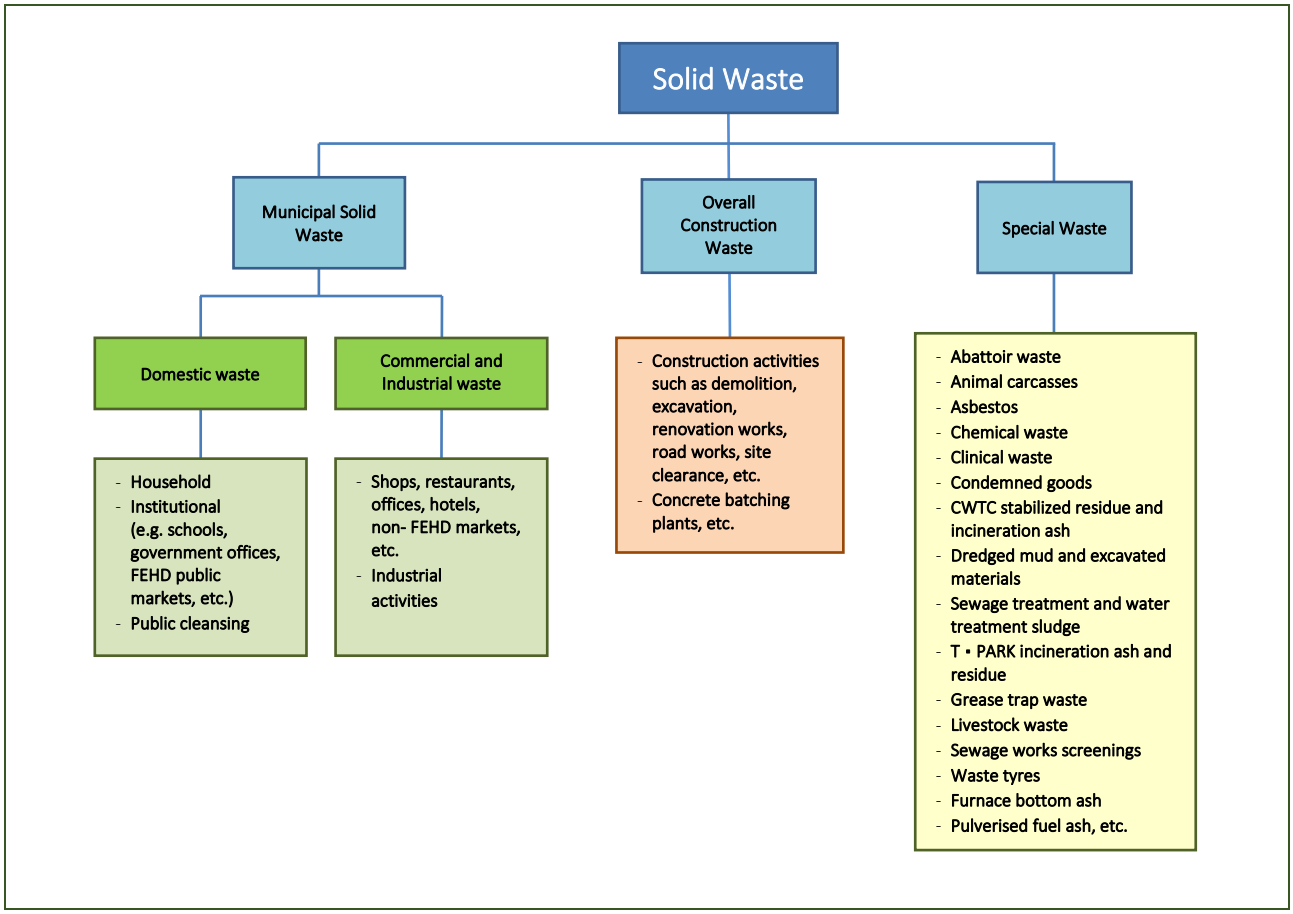
- Domestic waste refers to household waste, waste generated from daily activities in institutional premises (e.g. schools, government offices) and refuse collected from public cleansing services. Public cleansing waste includes dirt and litter collected by the Food and Environmental Hygiene Department (FEHD), marine refuse collected by the Marine Department and waste from country parks collected by the Agriculture, Fisheries and Conservation Department (AFCD).
- Commercial and industrial waste is waste arising from shops, restaurants, hotels, offices, markets in private housing estates and industrial activities, and does not include construction waste, chemical waste and other special waste. It is collected mainly by private waste collectors. However, some industries may deliver their industrial waste directly to landfills for disposal.
- Municipal solid waste contains a small portion of bulky items such as furniture, pianos and bicycles which cannot be handled by conventional compactor type refuse collection vehicles. These items are regarded as bulky waste and are usually collected separately.

Overall construction waste includes waste or surplus materials arising from construction activities such as site clearance, refurbishment, renovation, demolition, land excavation and road works. It also includes waste concrete that is generated from concrete batching plants, cement plaster/mortar plants not set up inside construction sites. The overall construction waste is sorted into inert materials (called public fill) and construction and demolition (C&D) waste (basically non-inert waste), where inert materials like debris, rubble, concrete and earth are reused in construction sites, or as fill in reclamation sites when available. C&D waste are disposed of at landfills.

Special waste is waste that requires special disposal arrangement. It includes abattoir waste, animal carcasses, asbestos, chemical waste, clinical waste, condemned goods, CWTC stabilized residue and incineration ash, dredged mud and excavated materials, sewage treatment and water treatment sludge, T • PARK incineration ash and residue, grease trap waste, livestock waste, sewage works screenings, waste tyres, furnace bottom ash, pulverised fuel ash, etc.

- Chemical waste is defined in the Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordinance (Cap. 354). Chemical waste can be any substance arising from any process or trade activity which contains chemical in such form, quantity or concentration that can cause pollution to the environment or become a risk to health.

Current classification of solid waste



Monitoring Methodology

Solid waste data are mainly collected from the following sources:

- Waste intake records taken at waste management facilities;
- Results of annual survey on waste composition conducted at landfills and RTSs;
- Results of waste recovery survey conducted on the local recycling industry;
- Statistics provided by relevant groups of EPD; and
- Statistics provided by other departments including FEHD, CEDD and C&SD.

Under the statistical framework of solid waste, waste is an unwanted material or product which has been consumed, or is unsuitable for consumption as perceived by the generator. The interpretations of common terminology of Hong Kong's Waste Management System are detailed below [1].

- Waste management system (WMS) of Hong Kong comprises the public sector, private recyclers, and green groups in Hong Kong which engage in treatment of wastes or recyclables.

- Waste disposal is locally generated waste that are disposed of at strategic landfills managed by EPD.

- Resource recovery refers to recycling, reuse, or composting of locally recovered recyclables in Hong Kong or other economies. Resource recovery activities divert wastes from local landfills for further uses. The quantity of recyclables recovered includes recyclables delivered outside Hong Kong for recycling as well as recyclables recycled locally.

- Waste generation is waste locally generated in Hong Kong and passes through the WMS. The generation quantity of waste equals the sum of quantities of waste disposal and resource recovery, as derived below:

$$\text{Waste generation} = \text{Waste disposal} + \text{Resource recovery}$$

- Waste avoidance refers to the reduction in the quantity of waste entering the WMS, as a result of preventing the creation of waste at source or treatment of waste outside of the WMS. For example, wastes directly recycled or reused at the place of generation by private sector (e.g. on-site composting) or exchange of unprocessed second-hand products are regarded as waste avoidance. Waste avoidance falls outside of the scope of WMS, and is not measured in waste statistics in this report.

- Waste recovery rate is calculated as the proportion of resource recovery in waste generation, as indicated below.

$$\text{Waste recovery rate} = \frac{\text{Resource recovery}}{\text{Waste generation}} \times 100\%$$

$$= \frac{\text{Resource recovery}}{\text{Waste disposal} + \text{Resource recovery}} \times 100\%$$

- Per capita waste disposal rate is the quantity of waste disposed of at landfills on a daily basis by an average person of the Hong Kong population, as derived below:

$$\text{Per capita waste disposal rate} = \frac{\text{Average daily quantity of waste disposal}}{\text{mid-year population}}$$

[1] The terminology applies to municipal solid waste (MSW) and overall construction waste only.