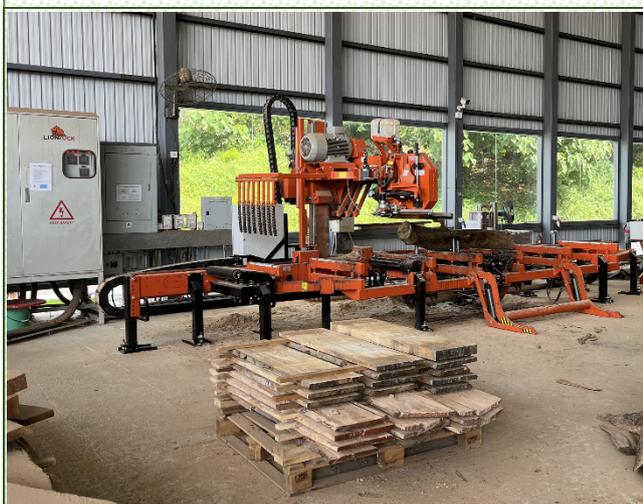


# MONITORING OF SOLID WASTE IN HONG KONG

*Waste Statistics for 2021*



Environmental Protection Department

# Monitoring of Solid Waste in Hong Kong

## *Waste Statistics for 2021*

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### Cover photos

Top left : Y • PARK (Yard Waste Recycling Centre)

Bottom left : Recycling Spot under the Community Recycling Network

Top right : Smart bin for domestic food waste collection in Heng Fa Chuen under the Recycling Fund Project

Bottom right : A private recycling plant for waste plastics in EcoPark

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## Abbreviations

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
PET	Polyethylene Terephthalate	聚脂纖維塑膠
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 2021. The information contained in this report is compiled from data collected from various sources, mainly including the administrative records of government waste 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 2021 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 2021

##### Total Solid Waste

Solid waste comprises municipal solid waste (MSW), overall construction waste, and special waste. In 2021, the total quantity of solid waste disposed of at the strategic landfills was 5.67 million tonnes. The average daily quantity was 15,533 tonnes per day (tpd), which has increased by 5.4% as compared to 2020 (**Plate 2.1**).

##### Municipal Solid Waste

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

In 2021, the quantity of MSW disposed was 11,358 tpd (4.15 million tonnes), which represented an increase of 5.1% as compared to 2020. Discounting the factor of population growth, the disposal rate of MSW was 1.53 kg/person/day, as compared to 1.44 kg/person/day in 2020. The increase in economic activities in 2021, with real Gross Domestic Product growth of 6.3% in 2021, as compared with the low base in 2020, has led to the rise in the associated waste disposal.

The major component of MSW is domestic waste. Its quantity of disposal was 6,992 tpd (2.55 million tonnes) in 2021, which has increased by 2.2% as compared to 2020. On the other hand, the quantity of C&I waste disposed of was 4,365 tpd (1.59 million tonnes) in 2021, which has increased by 10.1% when compared to 2020. The statistics mainly reflected the increase in commercial and industrial activities along the receding local pandemic.

**Plates 2.8 and 2.9** show the composition of MSW disposed of at landfills in 2021.

Of the 11,358 tonnes of MSW landfilled each day in 2021, some 3,437 tonnes (30% of MSW) were **food waste**, which has increased by 5.6% as compared to 2020. With the increase in catering services, domestic food waste disposal rate decreased from 0.33 kg/person/day in 2020 to 0.32 kg/person/day in 2021, while C&I food waste disposal rate increased from 0.10 kg/person/day in 2020 to 0.15 kg/person/day in 2021.

The second largest constituent of MSW was **waste plastics**. Some 2,331 tpd (21% of MSW) were disposed of at landfills in 2021, which has increased marginally by 0.8% as compared to 2020. The third largest constituent of MSW was **waste paper**, with a disposal quantity of 2,234 tpd (20% of MSW) in 2021, which has decreased markedly by 15.5% as compared to 2020.

### Overall Construction Waste

The quantity of generation (the sum of disposal and reuse) of construction waste in 2021 was 53,011 tpd (19.35 million tonnes), representing a decrease of 6% as compared with the 2020 level. Among them, the quantity transferred for direct reuse registered an increase of 9% and, since inert materials generated from some large-scale construction project were directly reused, the amount delivered to public fill reception facilities decreased by 17%. On the other hand, the quantity disposed of at landfills increased by 7% to 3,646 tpd (1.33 million tonnes) in 2021, which might be due to relatively more demolition after closure of companies and shops amid the COVID-19 pandemic. In the past decade, the recovery rate of construction materials has remained at above 90%, and was 93% in 2021.

### Special Waste

In 2021, the quantity of special waste disposed of at landfills was 529 tpd (0.19 million tonnes), which has increased by 3.2% as compared to 2020. The growth was mainly driven by the increase in dewatered dredged materials. 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 95% in disposal of dewatered sludges at landfills in 2021 as compared with 2014. On average, 1,123 tonnes of dewatered sewage sludges per day was treated at the T • PARK in 2021.

## Resource Recovery in 2021

Hong Kong's capacity to consume raw or recycled materials in local production is relatively limited under its economic structure, compared to countries that rely heavily on primary or secondary industries to sustain and promote their economies. As a result, over 80% of MSW recyclables locally recovered are delivered outside Hong Kong for recycling and less than 20% are recycled locally (**Plate 3.3**). Similar to other industries that constitute our economy, the local recycling industry is subject to fluctuations induced by business cycles and market conditions. Authorities in nearby cities and economies have further tightened their import control regimes in recent years. Local recyclables not meeting the import standards could no longer enter such places for further processing. In response, the local waste recovery industry continued to expand local recycling.

The overall MSW recovery rate in 2021 was 31%, which has increased from 28% in 2020 (**Plate 3.2**). MSW recovered for local recycling was about 280,000 tonnes in 2021, representing a significant increase of about 22% compared to about 230,000 tonnes in 2020 (**Plate 3.5**). The changes reflect the improved performance of the local recycling

## 1. Introduction and Key Observations

industry amid the strengthened waste reduction and recovery measures. On the other hand, the quantity delivered outside Hong Kong for recycling also increased from about 1.31 million tonnes in 2020 to about 1.57 million tonnes in 2021. The increase was mainly attributed to paper recyclables.

With the EPD expanding the community recycling network and strengthening various waste reduction and recovery measures, the quantities of food waste, plastics, and electrical and electronic equipment recycled locally increased year-on-year by about 21%, 9% and 10% respectively (**Plate 3.11**). In addition, the commissioning of Yard Waste Recycling Centre, Y • PARK, in 2021 promoted local recycling of yard waste and the quantity of yard waste recycled locally increased by about 3 times as compared to 2020.

The quantity of *food waste* recycled locally increased markedly from 54,700 tonnes in 2020 to 66,100 tonnes in 2021. Organic Resource Recovery Centre Phase 1 (O • PARK1) started to receive and process food waste from the industrial and commercial industries in July 2018. In addition, the EPD has implemented the Food Waste/Sewage Sludge Anaerobic Co-digestion Trial Scheme at the Tai Po Sewage Treatment Works in 2019 to treat food waste and launched a larger scale Pilot Scheme on Food Waste Collection in 2021. These arrangements help promote food waste recycling.

The quantity of *plastic recyclables* recycled locally rose significantly from 94,700 tonnes in 2020 to 103,600 tonnes in 2021. The local recycling industry has gradually shifted its mode of operation in response to tightening of import control by importing economies. The implementation of various new measures by the government further help promote waste plastic recovery, including the Plastic Recycling Pilot Scheme and Reverse Vending Machines (RVM) Pilot Scheme. In addition, as the control of transboundary movements of plastic wastes has been enhanced under the amendment to the Basel Convention starting from 2021, the local recycling industry needs time to adjust and adapt to such change affecting the global trade market.

Recovery rate of *waste electrical and electronic equipment (WEEE)* rose from 71% in 2020 to 74% in 2021. 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 increased.

## 2. Waste Quantities and Characteristics

**Plate 2.1 Disposal of total solid waste at landfills in 2021  
- By main waste category**

Waste category <sup>(1)</sup>	Average daily quantity (tpd) and year-on-year growth rate <sup>(3)</sup>	
<b>a. Municipal solid waste</b> (i) Domestic waste (ii) Commercial and industrial waste	<b>11,358</b>	<b>(5.1%)</b>
	6,992	(2.2%)
	4,365	(10.1%)
<b>b. Overall construction waste</b>	<b>3,646</b>	<b>(6.7%)</b>
<b>c. Special waste <sup>(2)</sup></b>	<b>529</b>	<b>(3.2%)</b>
<b>d. Total waste received at landfills ( a + b + c )</b>	<b>15,533</b>	<b>(5.4%)</b>
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 2020 and 2021  
- By main waste category



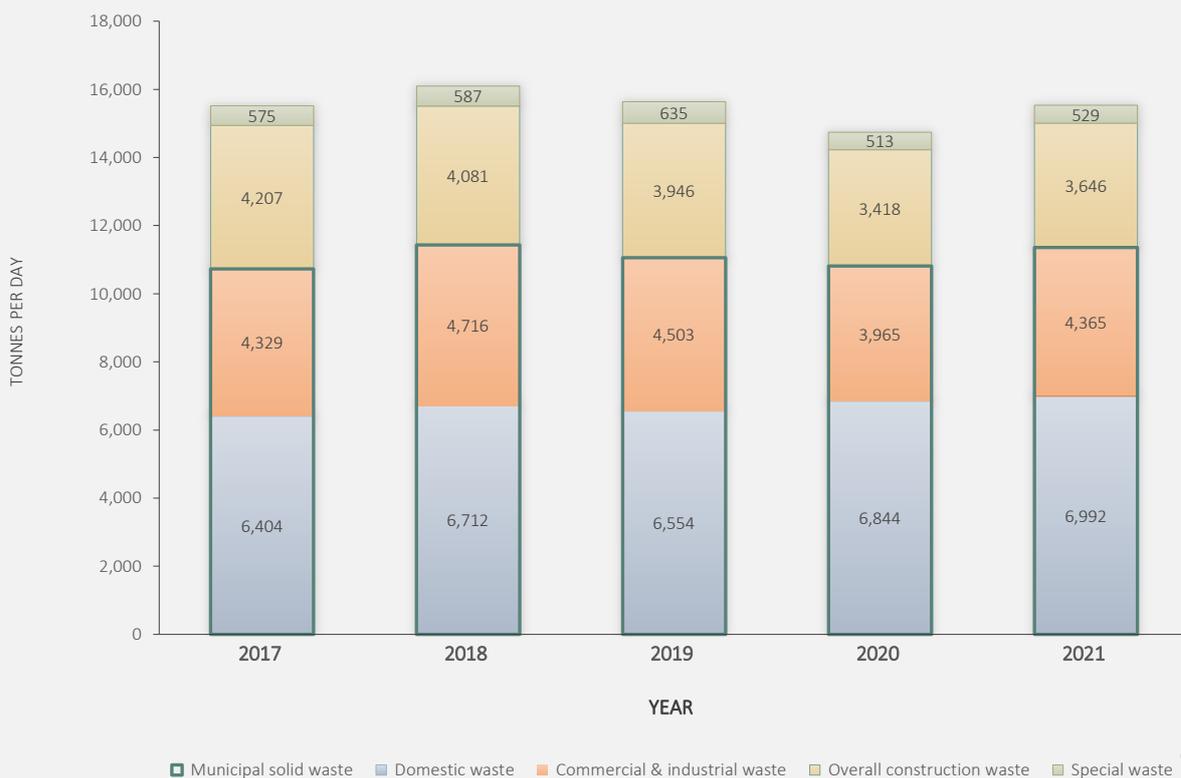
Note :

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

## 2. Waste Quantities and Characteristics

**Plate 2.3 Disposal of total solid waste at landfills from 2017 to 2021  
- By main waste category**

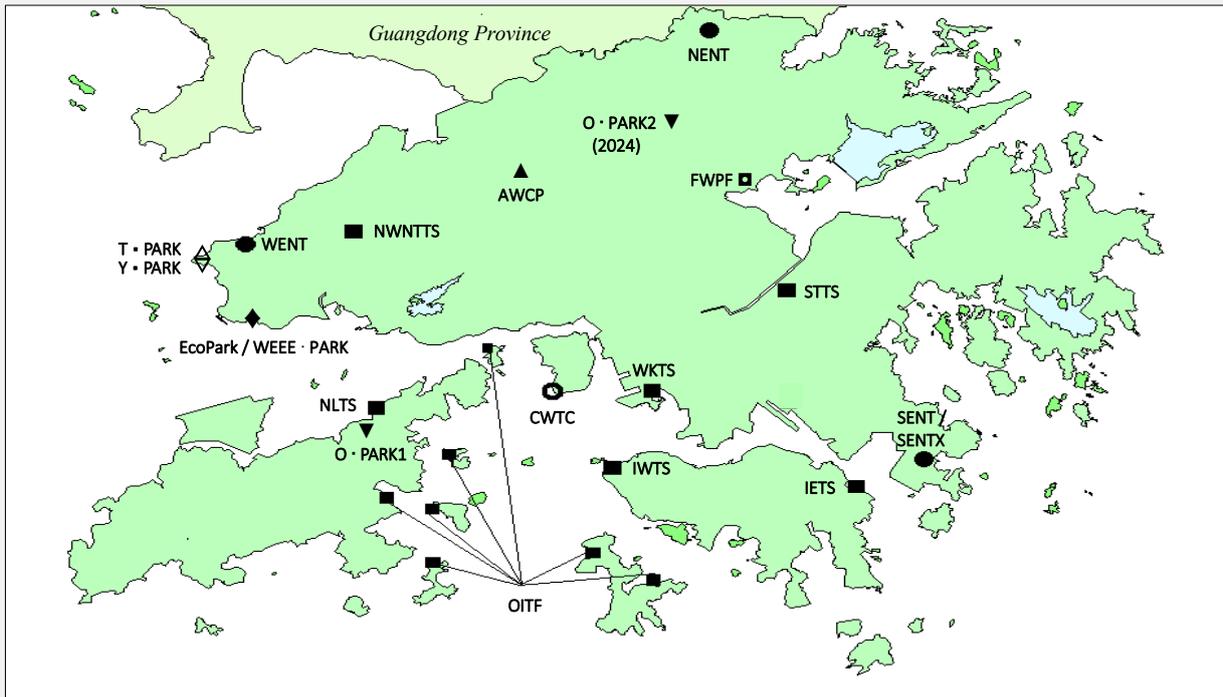
<b>Total disposal (tpd)</b>	15,516	16,096	15,637	14,739	15,533
<b>y-o-y change (%)</b>	1.2	3.7	-2.8	-5.7	5.4



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 SENT / SENTX NENT	- West New Territories Landfill - South East New Territories Landfill and its Extension <sup>(1)</sup> - North East New Territories Landfill
RTS	■	IETS IWTS WKTS OITF NLTS STTS NWNNTS	- Island East Transfer Station <sup>(2)</sup> - Island West Transfer Station <sup>(2)</sup> - West Kowloon Transfer Station <sup>(2)</sup> - Outlying Islands Transfer Facilities <sup>(2)</sup> - North Lantau Transfer Station <sup>(2)</sup> - Shatin Transfer Station <sup>(3)</sup> - North West New Territories Transfer Station <sup>(3)</sup>
CWTC	○	CWTC	- Chemical Waste Treatment Centre
Composting Plant	▲	AWCP	- Animal Waste Composting Plant
EcoPark / WEEE · PARK	◆	EcoPark / WEEE Treatment and Recycling Facility	
O · PARK	▼	Organic Resources Recovery Centre <sup>(4)</sup>	
Sludge Treatment Facility	△	T · PARK <sup>(5)</sup>	
Yard Waste Recycling Centre	▽	Y · PARK <sup>(6)</sup>	
FWPF	■	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 NWNNTS was transferred to NENT by road.
4. From July 2018 onwards, O · PARK1 at Siu Ho Wan has commenced operation to convert food waste into biogas for electricity generation whilst the residues from the process be produced as compost for landscaping and horticulture use. O · PARK2 at Sha Ling is scheduled for commissioning in 2024.
5. 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.
6. From June 2021 onwards, Y · PARK at Tsang Tsui 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.

## 2. Waste Quantities and Characteristics

**Plate 2.5 Total solid waste received by disposal facilities in 2021  
- By main waste category**

Disposal facility	Average daily quantity (tpd) and year-on-year growth rate <sup>(4)</sup>							
	Municipal solid waste		Overall construction waste		Special waste <sup>(1)</sup>		All waste categories	
<b>RTS</b>								
IETS - Island East Transfer Station	1,214	(13.2%)	-	-	-	-	1,214	(13.2%)
IWTS - Island West Transfer Station	1,095	(5.0%)	-	-	-	-	1,095	(5.0%)
WKTS - West Kowloon Transfer Station	2,606	(2.3%)	-	-	490	(-0.5%)	3,096	(1.8%)
OITF - Outlying Islands Transfer Facilities	90	(-1.6%)	27	(20.4%)	5	(24.0%)	122	(3.5%)
NLTS - North Lantau Transfer Station	591	(1.4%)	-	-	0	(-89.6%)	591	(1.3%)
STTS - Shatin Transfer Station	1,682	(2.6%)	-	-	-	-	1,682	(2.6%)
NWNTTS - North West New Territories Transfer Station	1,328	(3.3%)	-	-	-	-	1,328	(3.3%)
<b>Landfill</b>								
WENT - West New Territories Landfill <sup>(2)</sup>	6,200	(4.7%)	299	(54.0%)	255	(-2.1%)	6,754	(5.9%)
SENT/SENTX - South East New Territories Landfill and its Extension <sup>(3)</sup>	-	-	2,138	(6.9%)	-	-	2,138	(6.9%)
NENT - North East New Territories Landfill <sup>(2)</sup>	5,158	(5.5%)	1,209	(-1.2%)	274	(8.7%)	6,641	(4.4%)
<b>All landfills</b>	<b>11,358</b>	<b>(5.1%)</b>	<b>3,646</b>	<b>(6.7%)</b>	<b>529</b>	<b>(3.2%)</b>	<b>15,533</b>	<b>(5.4%)</b>

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.

## 2. Waste Quantities and Characteristics

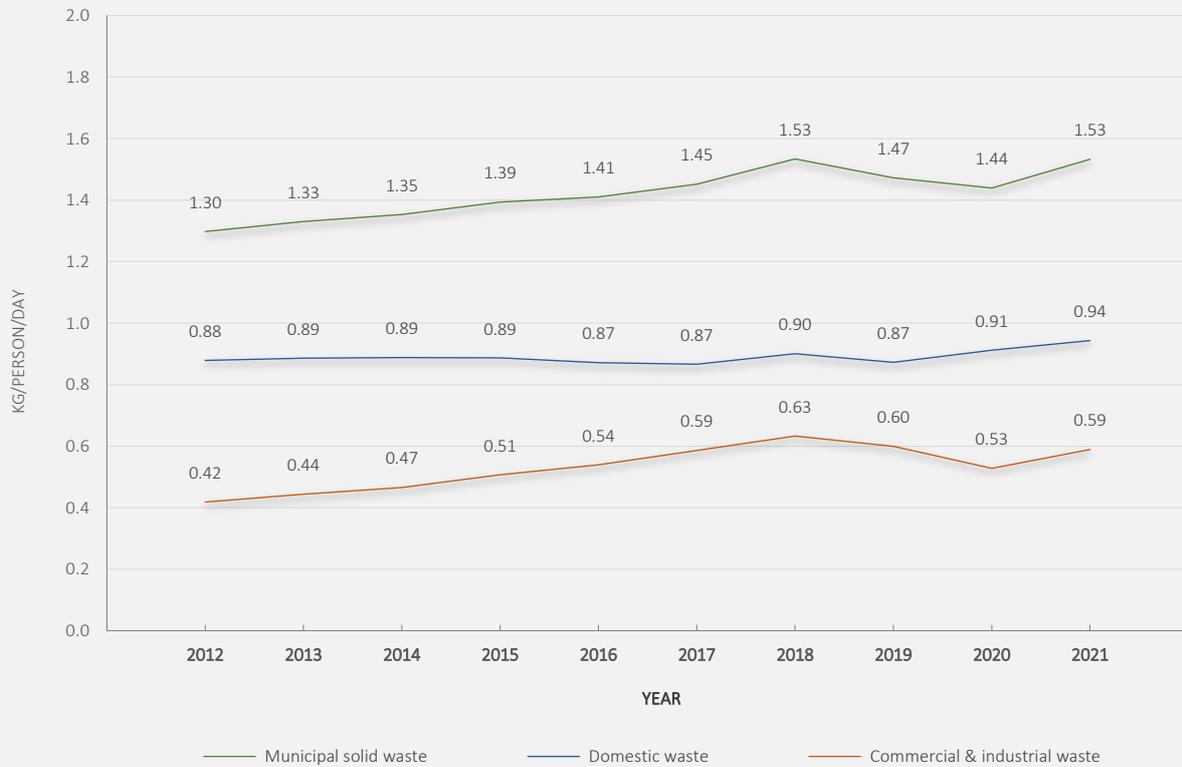
Plate 2.6 Arisings of solid waste disposed of at landfills in 2021  
- By district and main waste category

District <sup>(3)</sup>	Average daily quantity <sup>(1)(2)</sup> (tpd)			
	Domestic waste	Commercial & industrial waste	Municipal solid waste	Overall construction waste
	(a)	(b)	(c) = (a) + (b)	(d)
Central & Western	291	225	516	81
Eastern	484	125	609	75
Southern	220	44	264	91
Wan Chai	201	27	228	86
<b>Hong Kong Island</b>	<b>1,196</b>	<b>420</b>	<b>1,616</b>	<b>334</b>
Kowloon City	324	72	396	227
Kwun Tong	508	180	688	185
Sham Shui Po	400	90	490	108
Wong Tai Sin	310	74	384	49
Yau Tsim Mong	564	231	795	171
<b>Kowloon</b>	<b>2,105</b>	<b>647</b>	<b>2,753</b>	<b>739</b>
Kwai Tsing	361	524	884	202
North	382	628	1,010	212
Sai Kung	370	48	418	855
Shatin	526	443	969	148
Tai Po	340	164	504	157
Tsuen Wan	258	275	533	37
Tuen Mun	487	362	849	666
Yuen Long	776	757	1,533	126
<b>NT – Except Outlying Islands</b>	<b>3,500</b>	<b>3,201</b>	<b>6,701</b>	<b>2,404</b>
Cheung Chau	26	0	26	-
Hei Ling Chau	2	0	2	-
Lamma Island	9	0	9	-
Ma Wan	22	0	22	-
Mui Wo	22	0	22	-
Lantau <sup>(5)</sup>	105	97	202	-
Peng Chau	6	0	6	-
<b>NT – Outlying Islands</b>	<b>191</b>	<b>97</b>	<b>288</b>	<b>168 <sup>(4)</sup></b>
<b>All districts</b>	<b>6,992</b>	<b>4,365</b>	<b>11,358</b>	<b>3,646</b>

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 <sup>(1)</sup> of MSW, domestic waste and commercial & industrial waste from 2012 to 2021



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 2022.

## 2. Waste Quantities and Characteristics

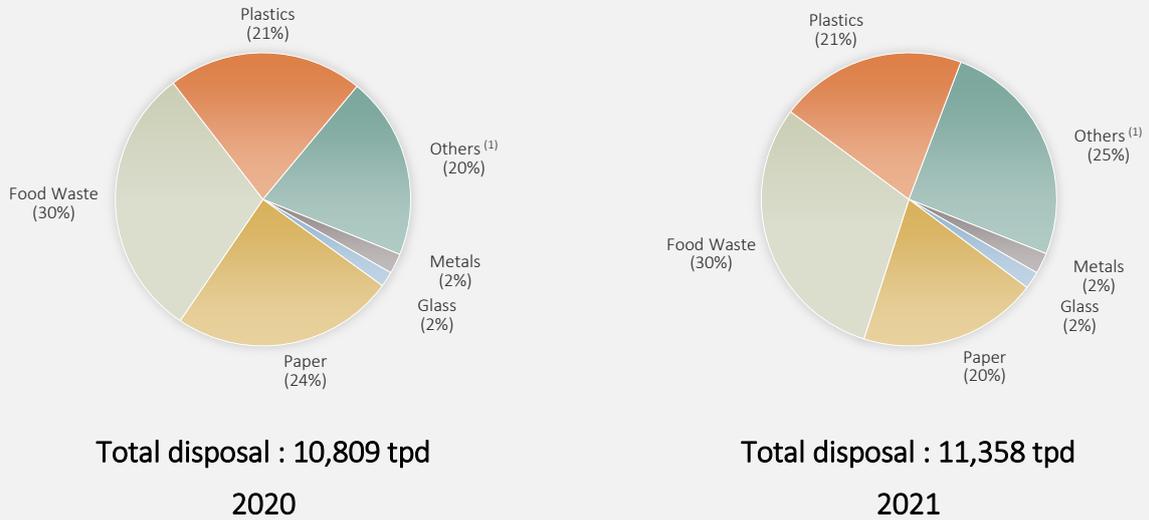
Plate 2.8 Composition of MSW disposed of at landfills in 2021 - By waste type					
Composition	Average daily quantity (tpd) and percentage share by weight <sup>(3)</sup>				
	Domestic waste (a)		Commercial & industrial waste (b)		Municipal solid waste (c) = (a) + (b)
Glass	129	(1.8%)	91	(2.1%)	220 (1.9%)
Metals	120	(1.7%)	141	(3.2%)	261 (2.3%)
Paper	1,321	(18.9%)	913	(20.9%)	2,234 (19.7%)
Plastics	1,342	(19.2%)	989	(22.7%)	2,331 (20.5%)
Putrescibles	2,510	(35.9%)	1,166	(26.7%)	3,675 (32.4%)
Textiles	252	(3.6%)	152	(3.5%)	404 (3.6%)
Wood	51	(0.7%)	211	(4.8%)	262 (2.3%)
Household hazardous wastes (HHWs) <sup>(1)</sup>	92	(1.3%)	51	(1.2%)	143 (1.3%)
Others <sup>(2)</sup>	1,177	(16.8%)	650	(14.9%)	1,827 (16.1%)
<b>Total</b>	<b>6,992</b>	<b>(100.0%)</b>	<b>4,365</b>	<b>(100.0%)</b>	<b>11,358 (100.0%)</b>
Notes :					
1. Household hazardous wastes (HHWs) include paints, pesticides, fuels, cylinders, batteries, electrical appliances, mercury-containing 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.					

## 2. Waste Quantities and Characteristics

Plate 2.9 Composition of MSW disposed of at landfills in 2021 - By major waste type					
Composition <sup>(1)</sup>	Average daily quantity (tpd) and percentage share by weight <sup>(4)</sup>				
	Domestic waste (a)		Commercial & industrial waste (b)		Municipal solid waste (c) = (a) + (b)
<b>Glass</b>					
- Glass bottles	104	(1.5%)	75	(1.7%)	178 (1.6%)
- Other glass	25	(0.4%)	17	(0.4%)	42 (0.4%)
<b>Glass sub-total</b>	<b>129</b>	<b>(1.8%)</b>	<b>91</b>	<b>(2.1%)</b>	<b>220 (1.9%)</b>
<b>Metals</b>					
- Ferrous metals	82	(1.2%)	108	(2.5%)	190 (1.7%)
- Non-ferrous metals	38	(0.5%)	33	(0.8%)	71 (0.6%)
<b>Metals sub-total</b>	<b>120</b>	<b>(1.7%)</b>	<b>141</b>	<b>(3.2%)</b>	<b>261 (2.3%)</b>
<b>Paper</b>					
- Cardboard / Newsprint / Office paper	476	(6.8%)	444	(10.2%)	920 (8.1%)
- Tetrapak	45	(0.6%)	18	(0.4%)	63 (0.6%)
- Others <sup>(2)</sup>	800	(11.4%)	451	(10.3%)	1,251 (11.0%)
<b>Paper sub-total</b>	<b>1,321</b>	<b>(18.9%)</b>	<b>913</b>	<b>(20.9%)</b>	<b>2,234 (19.7%)</b>
<b>Plastics</b>					
- Plastic bags	552	(7.9%)	290	(6.6%)	842 (7.4%)
- Plastic bottles	127	(1.8%)	74	(1.7%)	202 (1.8%)
- Plastic / Polyfoam dining wares	140	(2.0%)	85	(1.9%)	225 (2.0%)
- Others <sup>(3)</sup>	522	(7.5%)	540	(12.4%)	1,063 (9.4%)
<b>Plastics sub-total</b>	<b>1,342</b>	<b>(19.2%)</b>	<b>989</b>	<b>(22.7%)</b>	<b>2,331 (20.5%)</b>
<b>Putrescibles</b>					
- Food waste	2,342	(33.5%)	1,095	(25.1%)	3,437 (30.3%)
- Yard waste	167	(2.4%)	71	(1.6%)	238 (2.1%)
<b>Putrescibles sub-total</b>	<b>2,510</b>	<b>(35.9%)</b>	<b>1,166</b>	<b>(26.7%)</b>	<b>3,675 (32.4%)</b>
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, off-cuts, scrap, etc.					
4. Figures in brackets refer to percentage shares by weight in total disposal quantity of the corresponding waste type.					

## 2. Waste Quantities and Characteristics

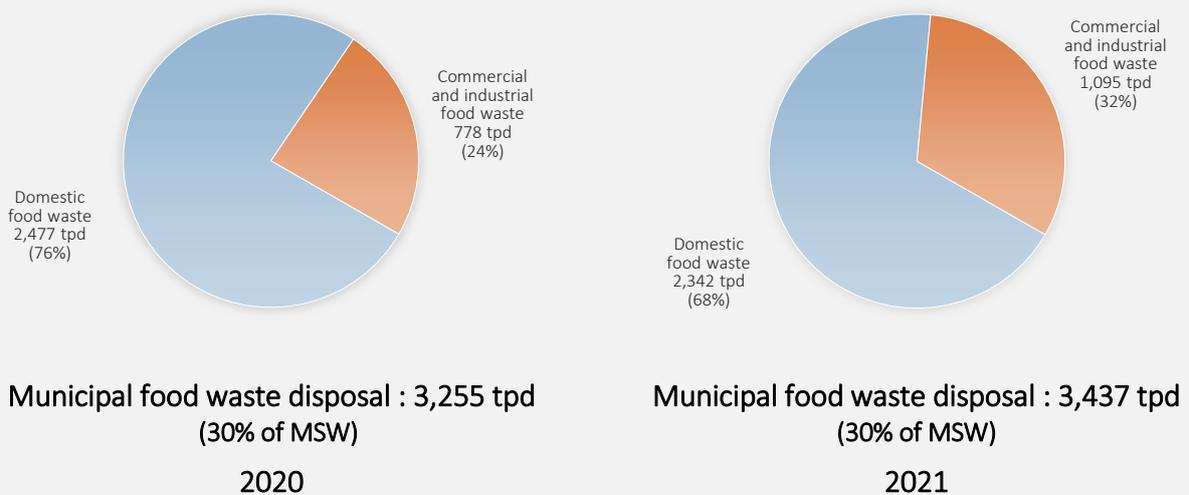
**Plate 2.10** Composition of MSW disposed of at landfills in percentages in 2020 and 2021 - By major waste type



Note :

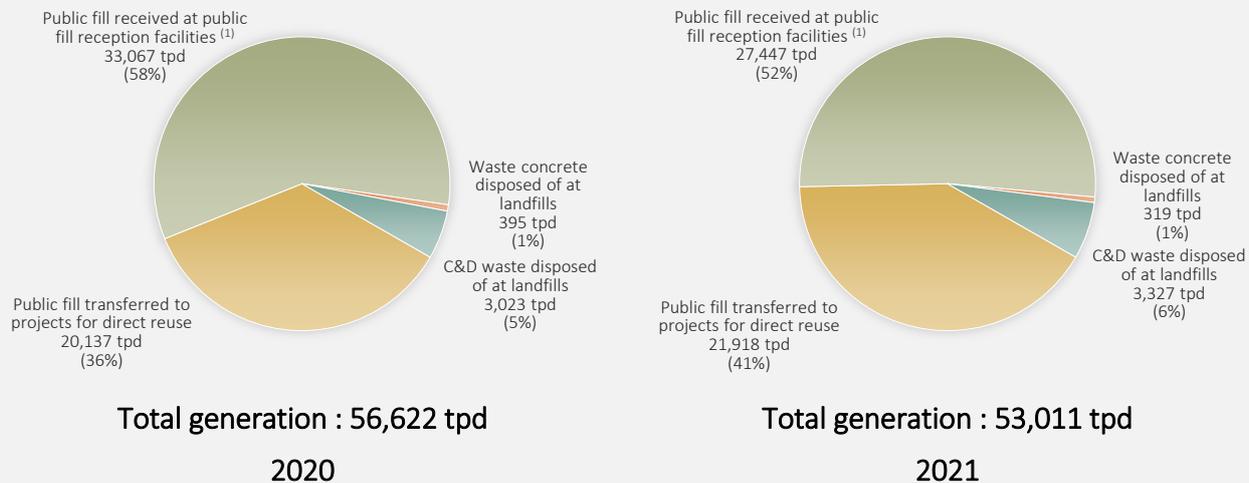
- Others include textiles, wood, yard waste, household hazardous wastes, bulky items and miscellaneous waste materials.

**Plate 2.11** Composition of municipal food waste disposed of at landfills in 2020 and 2021 - By waste category



## 2. Waste Quantities and Characteristics

**Plate 2.12 Disposal and reuse of overall construction waste in 2020 and 2021**



**Note :**

- 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. Waste Quantities and Characteristics

Plate 2.13a Disposal of special waste at landfills in 2021 - By special waste type		
Special waste type	Average daily quantity <sup>(1)</sup> (tpd) and year-on-year growth rate <sup>(7)</sup>	
Abattoir waste	6	(34.7%)
Animal carcasses and kennel waste	5	(36.8%)
Asbestos waste	4	(14.9%)
Chemical waste other than asbestos waste	4	(-18.2%)
Clinical waste (with package material) <sup>(2)</sup>	1	(-60.7%)
Dewatered dredged materials	15	(260.6%)
Dewatered sludges <sup>(3)</sup>	39	(-40.1%)
Dewatered waterworks sludge	85	(12.9%)
Incineration ash and stabilised residue	146	(6.4%)
Livestock waste <sup>(4)</sup>	74	(7.6%)
Sewage works screenings	77	(7.4%)
Waste tyres <sup>(5)</sup>	57	(9.3%)
Others <sup>(6)</sup>	16	(-13.5%)
<b>All special waste disposed at landfills</b>	<b>529</b>	<b>(3.2%)</b>
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 2021, the generation of livestock waste amounted to 160 tpd, out of which 74 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.		

## 2. Waste Quantities and Characteristics

**Plate 2.13b Treatment of special waste not disposed of at landfills in 2021  
- By special waste type**

Special waste type	Treatment method	Average daily quantity <sup>(1)</sup> (tpd) and year-on-year growth rate <sup>(6)</sup>	
Chemical waste other than asbestos waste	CWTC	29	(-13.2%)
Clinical waste	CWTC	11	(45.9%)
Grease trap waste	WKTS <sup>(2)</sup>	490	(-0.5%)
Horse stable waste	AWCP	26	(-2.2%)
Dredged mud and excavated materials	Marine dumping <sup>(3)</sup>	3,288	(-78.9%)
Dewatered sewage sludge <sup>(4)</sup>	Incineration at T • PARK	1,123	(8.6%)
Furnace bottom ash	Concrete manufacturing, stored in lagoon <sup>(5)</sup>	80	(10.5%)
Pulverised fuel ash	Concrete manufacturing, stored in lagoon <sup>(5)</sup>	797	(5.1%)

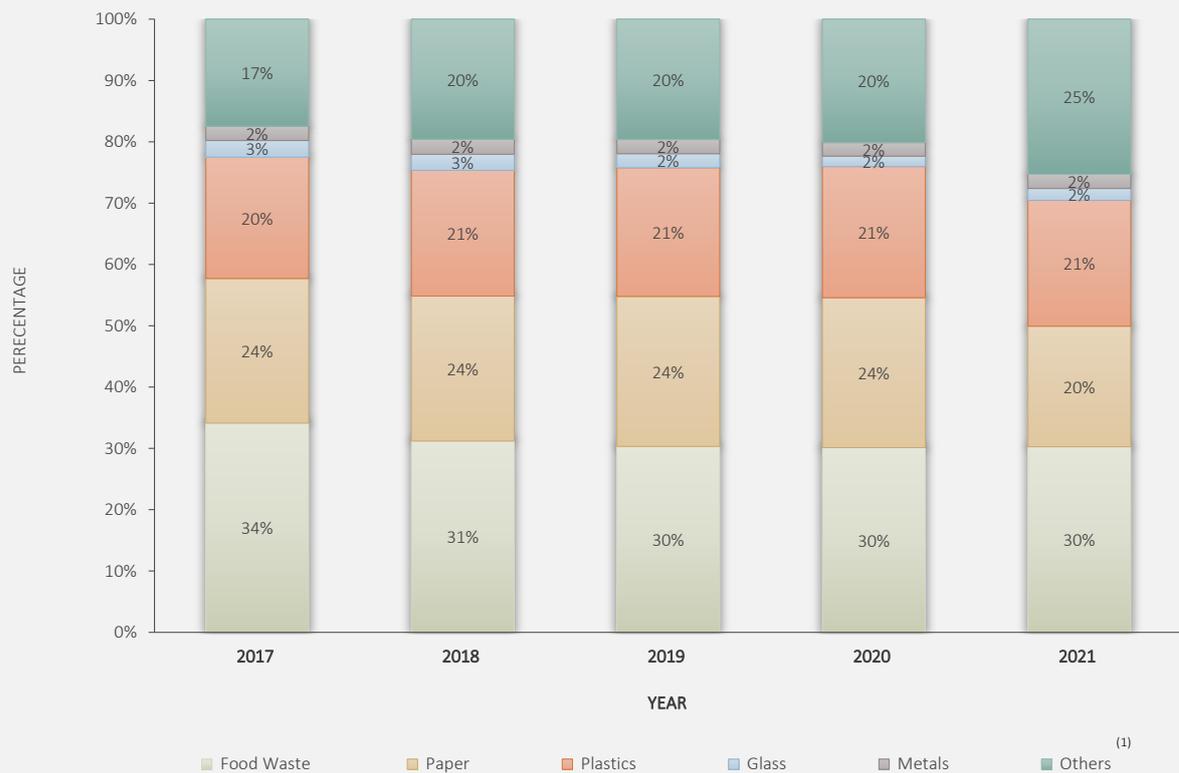
Notes :

- 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.
- The figure is the quantity of grease trap waste treated by the Grease Trap Waste Treatment Facility at WKTS.
- The density of the dredged mud and excavated materials is assumed to be one tonne per cubic metre.
- 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.
- Furnace bottom ash and pulverised fuel ash are wastes resulting from coal-fired electricity generation. Their figures are provided by the Power Companies.
- 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.

## 2. Waste Quantities and Characteristics

**Plate 2.14** Composition of MSW disposed of at landfills  
in percentages from 2017 to 2021  
- By major waste type

<b>Total disposal (tpd)</b>	10,733	11,428	11,057	10,809	11,358
<b>y-o-y change (%)</b>	3.7	6.5	-3.2	-2.2	5.1



Note :

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

## 2. Waste Quantities and Characteristics

**Plate 2.15** Composition of MSW disposed of at landfills  
in quantities from 2017 to 2021  
- By major waste type

<b>Total disposal (tpd)</b>	10,733	11,428	11,057	10,809	11,358
<b>y-o-y change (%)</b>	3.7	6.5	-3.2	-2.2	5.1



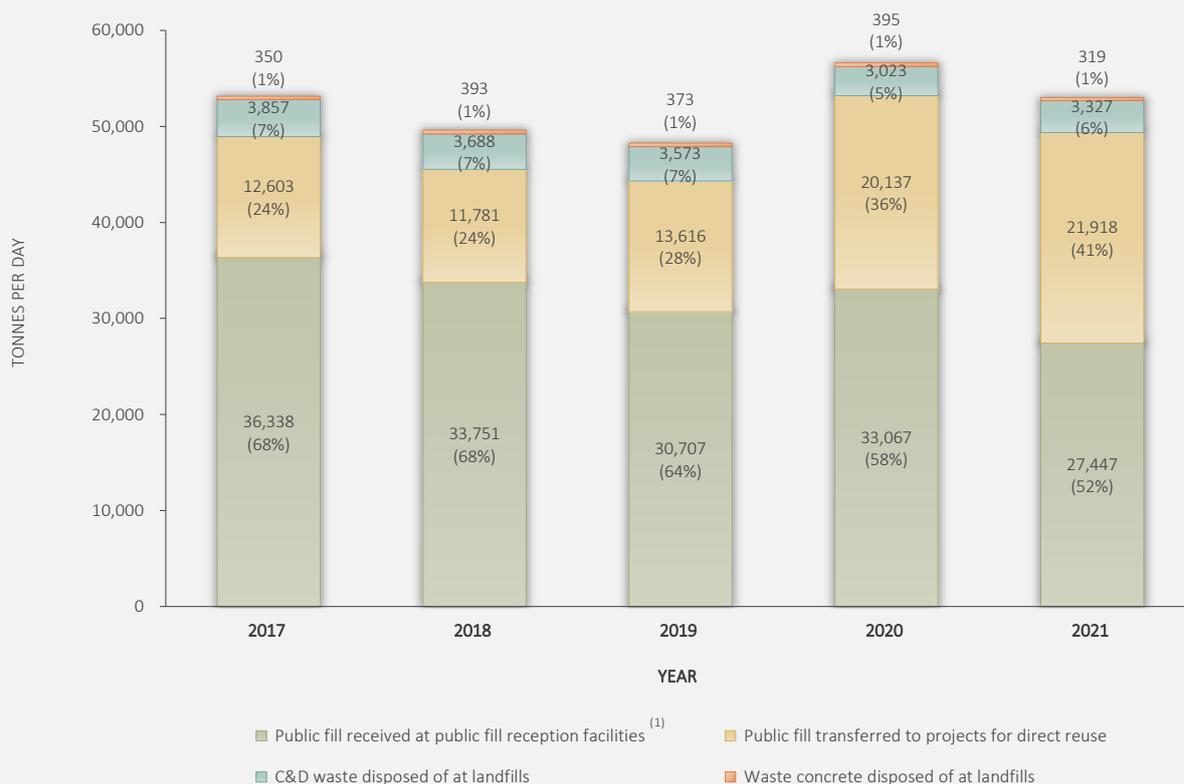
Note :

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

## 2. Waste Quantities and Characteristics

Plate 2.16 Disposal and reuse of overall construction waste from 2017 to 2021

<b>Total generation (tpd)</b>	53,148	49,612	48,269	56,622	53,011
<b>y-o-y change (%)</b>	-20.4	-6.7	-2.7	17.3	-6.4



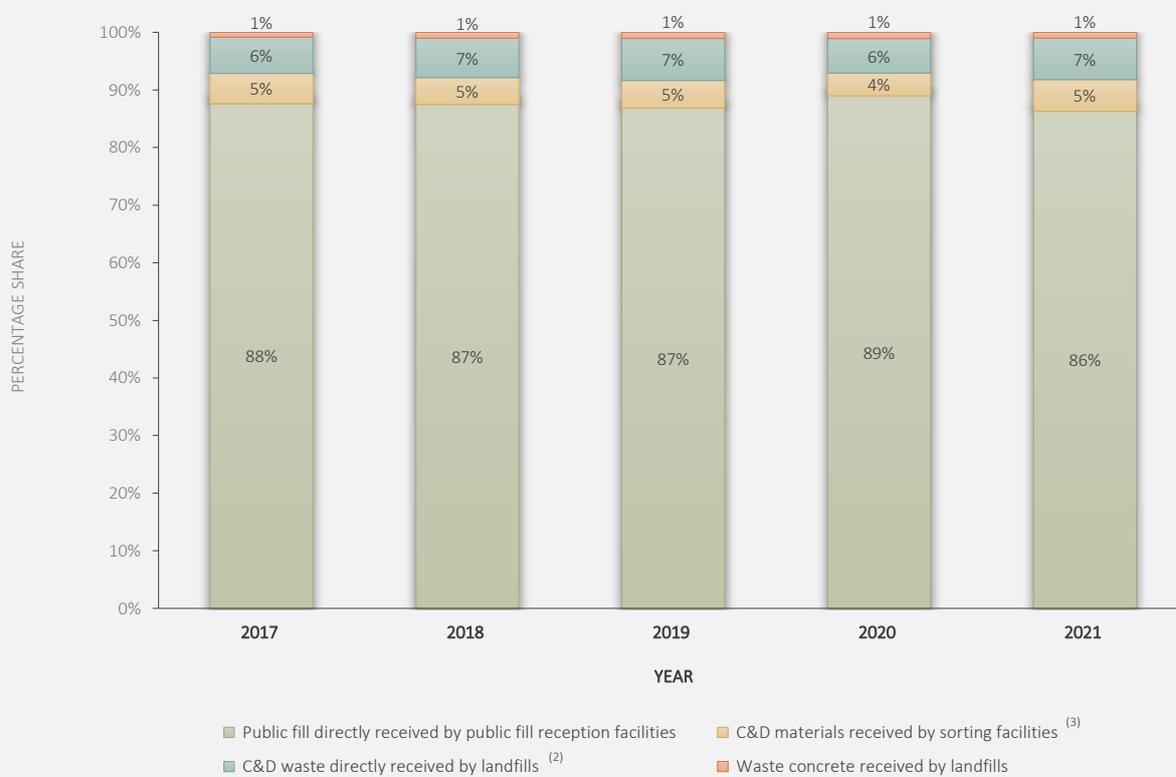
**Notes :**

- 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.
- Figures in brackets refer to percentage shares by weight.

## 2. Waste Quantities and Characteristics

**Plate 2.17 Overall construction waste received by treatment facilities <sup>(1)</sup> from 2017 to 2021**

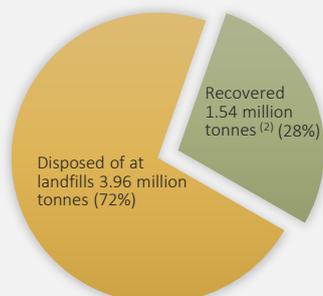
	2017	2018	2019	2020	2021	Unit : tpd
Public fill reception facilities	35,541	33,094	30,081	32,536	26,782	
Sorting facilities	2,124	1,762	1,670	1,439	1,699	
Landfills	2,895	2,974	2,894	2,592	2,548	
Waste concrete	350	393	373	395	319	
C&D waste	2,545	2,581	2,522	2,197	2,230	



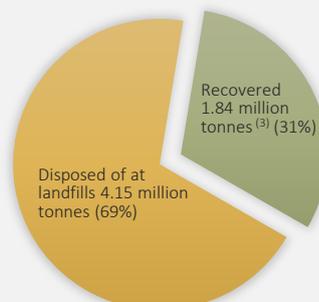
**Notes :**

- 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.
- 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.
- 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 2020 and 2021



Total generation <sup>(1)</sup> : 5.49 million tonnes  
2020

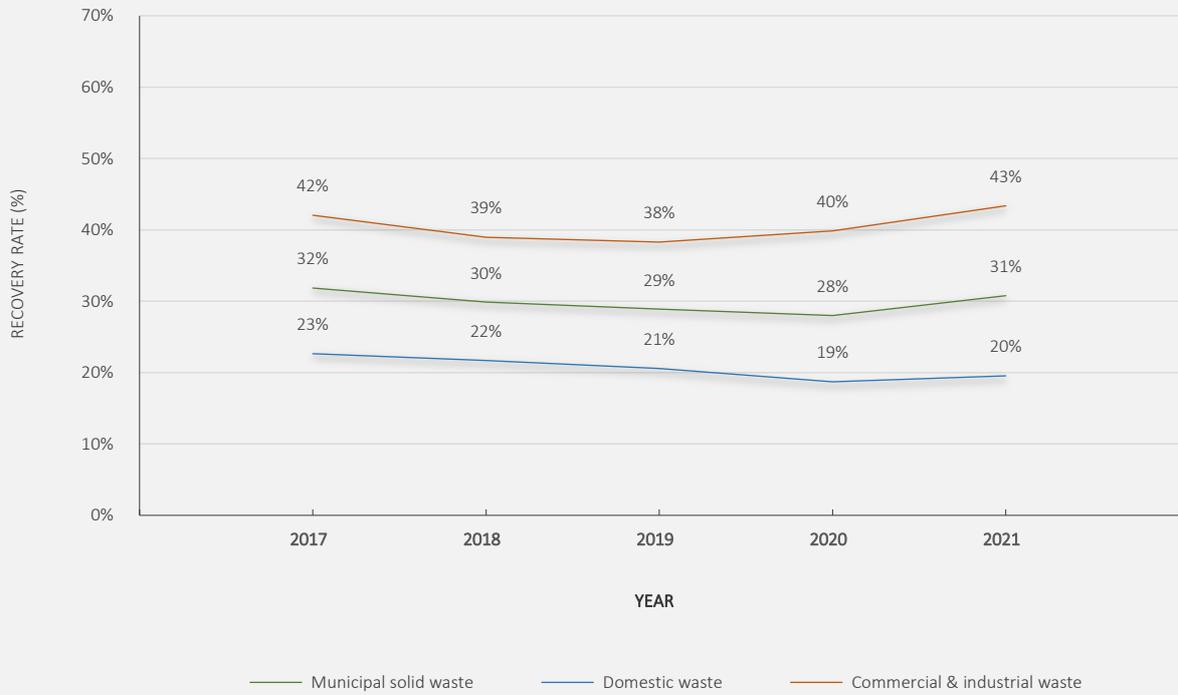


Total generation <sup>(1)</sup> : 5.99 million tonnes  
2021

Notes :

1. Generation of MSW is the sum of MSW disposed of at landfills and MSW recovered for recycling.
2. A total of 1.54 million tonnes of recyclables were recovered for recycling in 2020, of which, 1.31 million tonnes (85%) were delivered outside Hong Kong for recycling and 0.23 million tonnes (15%) recycled locally.
3. A total of 1.84 million tonnes of recyclables were recovered for recycling in 2021, of which, 1.57 million tonnes (85%) were delivered outside Hong Kong for recycling and 0.28 million tonnes (15%) recycled locally.

Plate 3.2 Recovery rates of MSW, domestic waste, and commercial & industrial waste from 2017 and 2021



### 3. Resource Recovery and Recycling

**Plate 3.3**      **Recyclables recovered from MSW in 2021**  
- By type of recyclable

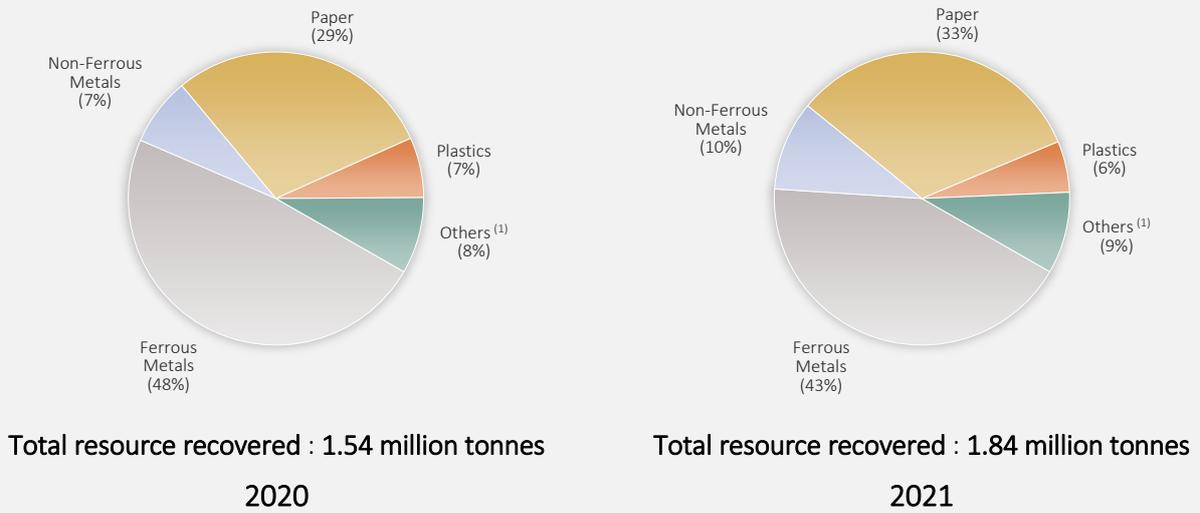
Recyclable type	Quantity of recovered recyclables (thousand tonnes) and percentage share by weight <sup>(5)</sup>					
	Delivered outside Hong Kong for recycling (a)		Recycled locally (b)		Total recovered for recycling (c) = (a) + (b)	
Paper	598.5	(38.2%)	4.5	(1.6%)	603.0	(32.8%)
Plastics	0.4	(0.0%)	103.6	(37.6%)	104.0	(5.7%)
Ferrous metals	781.8	(49.9%)	4.4	(1.6%)	786.1	(42.7%)
Non-ferrous metals	180.1	(11.5%)	1.8	(0.6%)	181.9	(9.9%)
Food waste <sup>(1)</sup>	0.0	(0.0%)	66.1	(24.0%)	66.1	(3.6%)
Glass <sup>(2)</sup>	0.8	(0.1%)	19.5	(7.1%)	20.4	(1.1%)
Rubber tyres <sup>(3)</sup>	0.0	(0.0%)	7.6	(2.7%)	7.6	(0.4%)
Textiles	0.5	(0.0%)	8.1	(2.9%)	8.5	(0.5%)
Wood	0.0	(0.0%)	10.6	(3.9%)	10.6	(0.6%)
Electrical and electronic equipment	3.4	(0.2%)	40.4	(14.7%)	43.8	(2.4%)
Yard waste <sup>(4)</sup>	0.0	(0.0%)	8.8	(3.2%)	8.8	(0.5%)
<b>Total</b>	<b>1,565.5</b>	<b>(100.0%)</b>	<b>275.3</b>	<b>(100.0%)</b>	<b>1,840.9</b>	<b>(100.0%)</b>

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 includes reuse, retreading and recycling of vehicle tyres and retreading of aircraft tyres in Hong Kong.
4. 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).
5. Figures less than 50 tonnes are shown as 0.0. Figures in brackets refer to percentage shares by weight.

### 3. Resource Recovery and Recycling

**Plate 3.4** Recyclables recovered from MSW in percentages in 2020 and 2021 - By type of recyclable



Note :

- Others include glass, wood, rubber tyres, textiles, food waste, electrical and electronic equipment, and yard waste.

**Plate 3.5** Quantities of recyclable materials recovered from MSW from 2017 and 2021

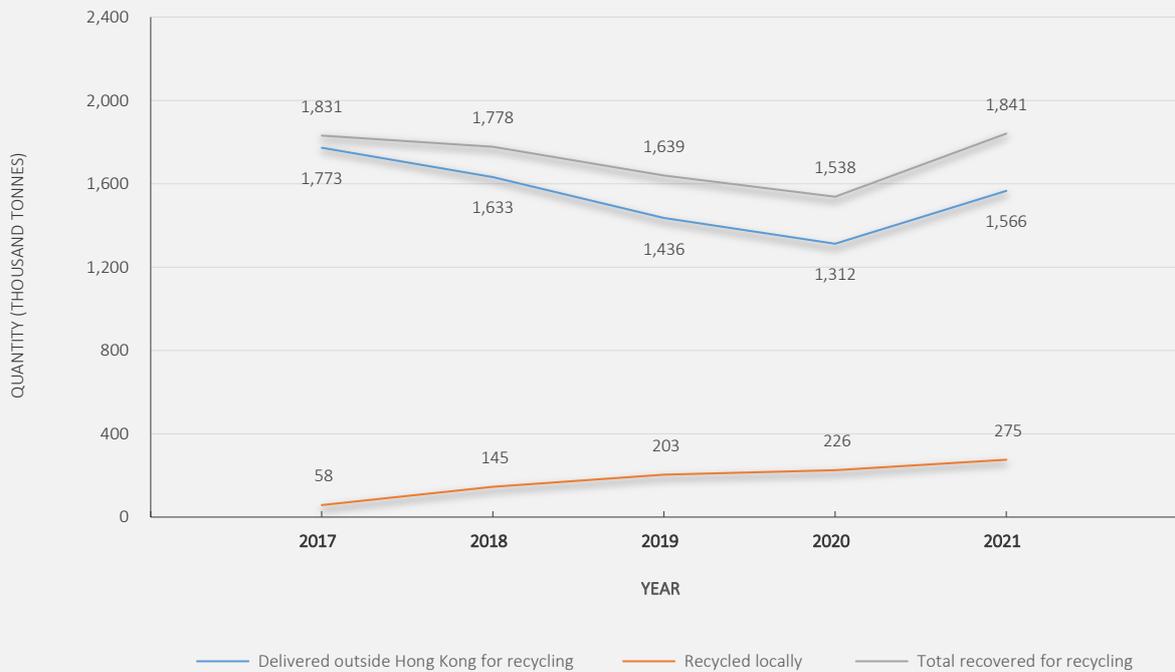


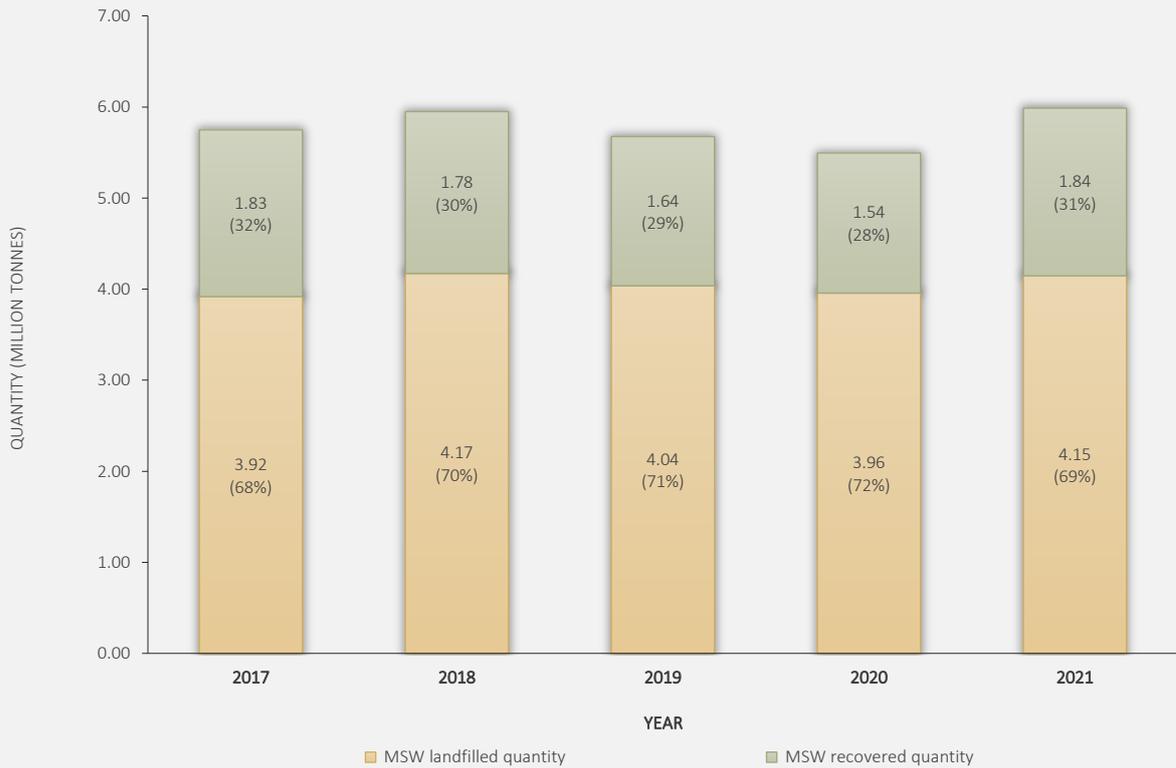
Plate 3.6 Recyclable materials recovered from MSW recycled outside Hong Kong in 2021  
- By major type of recyclable material

Recyclable type	Quantity (thousand tonnes)	Value (\$ thousand)	Value per unit weight (\$ / tonne)
Ferrous metals	781.8	2,872,645	3,675
Non-ferrous metals	180.1	5,844,403	32,447
Plastics	0.4	1,007	2,517
Paper	598.5	967,385	1,616
Textiles	0.5	1,905	4,127
Glass	0.8	150	179

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 2017 and 2021

Total generation (million tonnes)	5.75	5.95	5.67	5.49	5.99
y-o-y change (%)	0.9	3.5	-4.6	-3.2	9.0



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 2017 and 2021  
- By major type of recyclable

<b>Total recovery (million tonnes)</b>	1.83	1.78	1.64	1.54	1.84
<b>y-o-y change (%)</b>	-4.3	-2.9	-7.8	-6.2	19.7

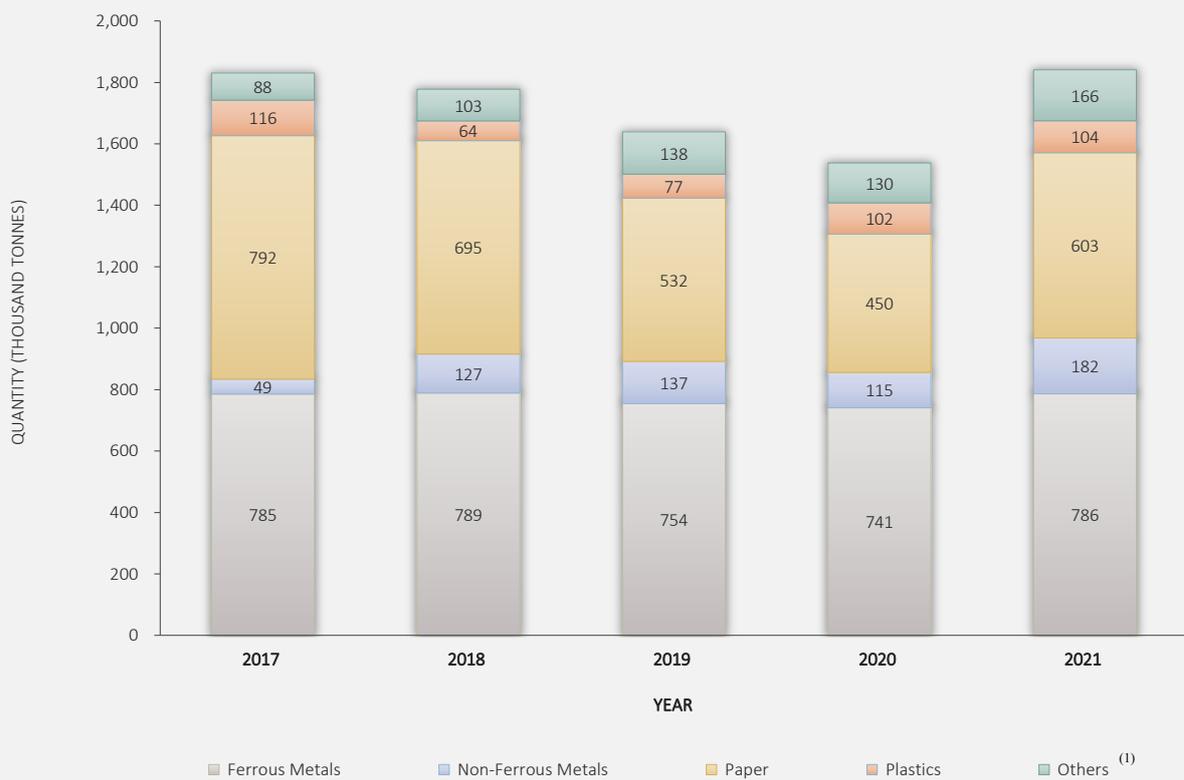


Note :

- Others include glass, wood, rubber tyres, textiles, food waste, electrical and electronic equipment, and yard waste.

Plate 3.9 Recyclables recovered from MSW in quantities from 2017 and 2021 - By major type of recyclable

Total recovery (million tonnes)	1.83	1.78	1.64	1.54	1.84
y-o-y change (%)	-4.3	-2.9	-7.8	-6.2	19.7

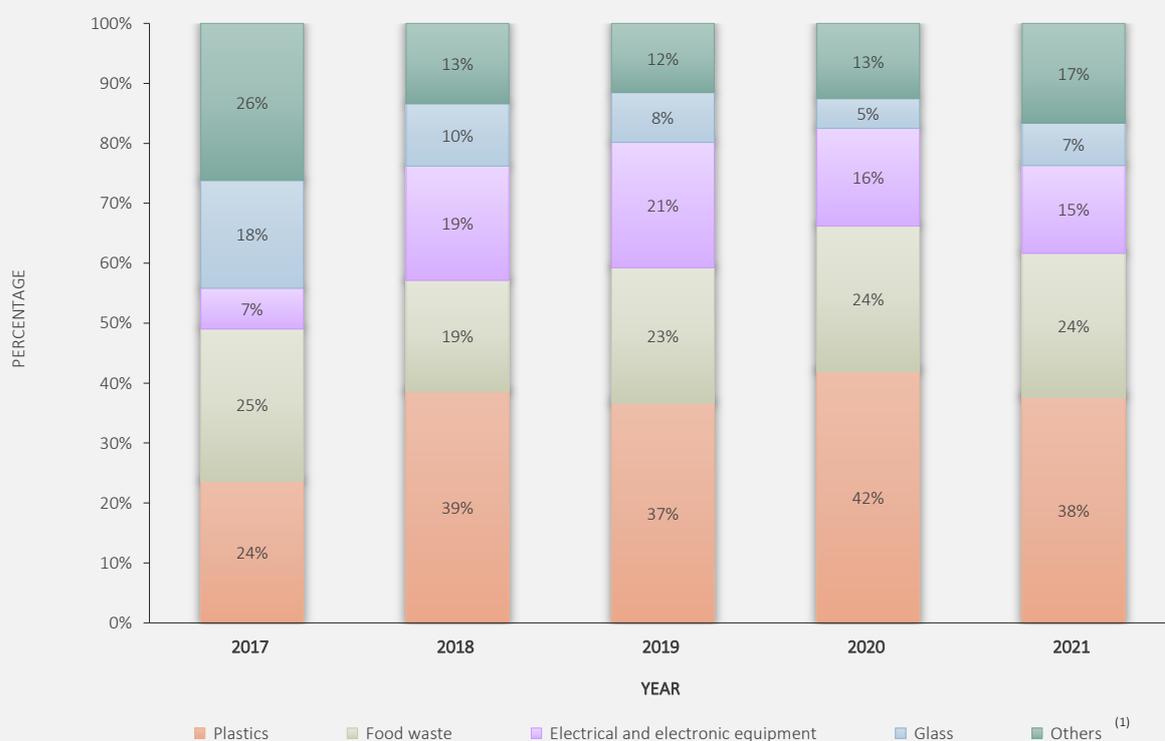


Note :

- Others include glass, wood, rubber tyres, textiles, food waste, electrical and electronic equipment, and yard waste.

**Plate 3.10** Recyclables recovered from MSW recycled locally in percentages from 2017 and 2021 - By major type of recyclable material

Total recyclables recycled locally (thousand tonnes)	57.7	144.9	203.1	225.6	275.3
y-o-y change (%)	3.1	151.3	40.2	11.1	22.0

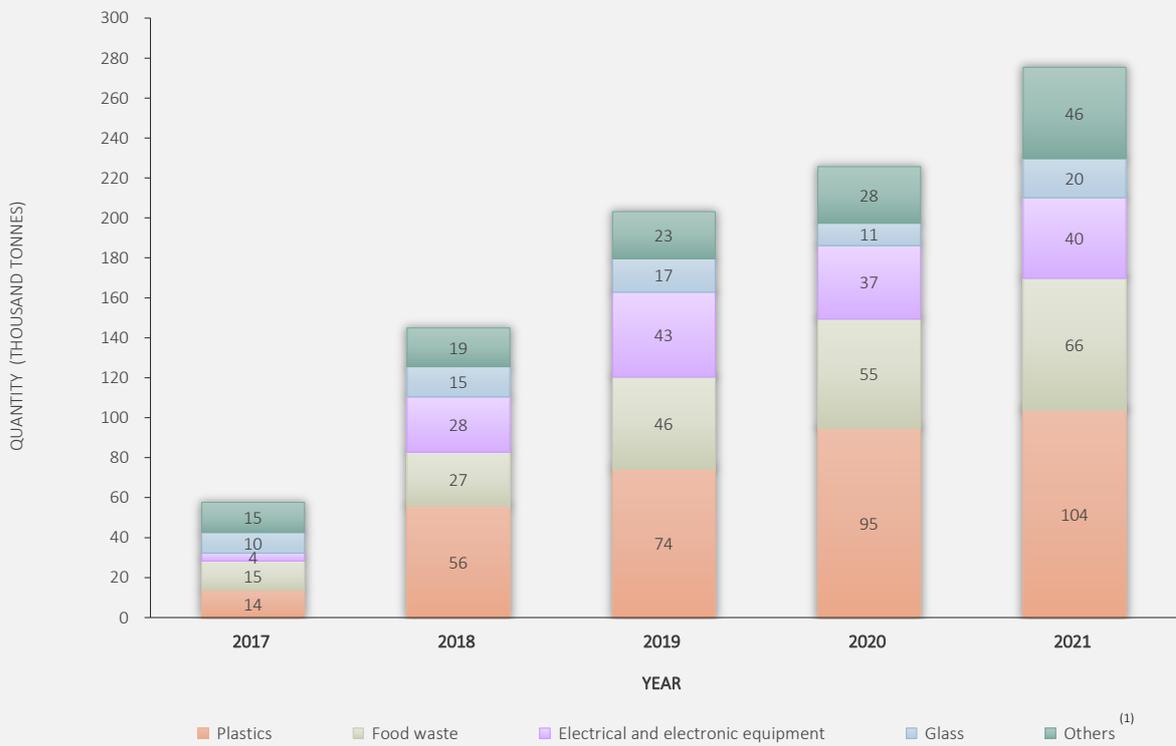


Note :

- Others include paper, metals, wood, rubber tyres, textiles, and yard waste.

**Plate 3.11** Recyclables recovered from MSW recycled locally in quantities from 2017 and 2021 - By major type of recyclable material

<b>Total recyclables recycled locally (thousand tonnes)</b>	57.7	144.9	203.1	225.6	275.3
<b>y-o-y change (%)</b>	3.1	151.3	40.2	11.1	22.0



Note :

- Others include paper, metals, wood, rubber tyres, textiles, and yard waste.

## 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.

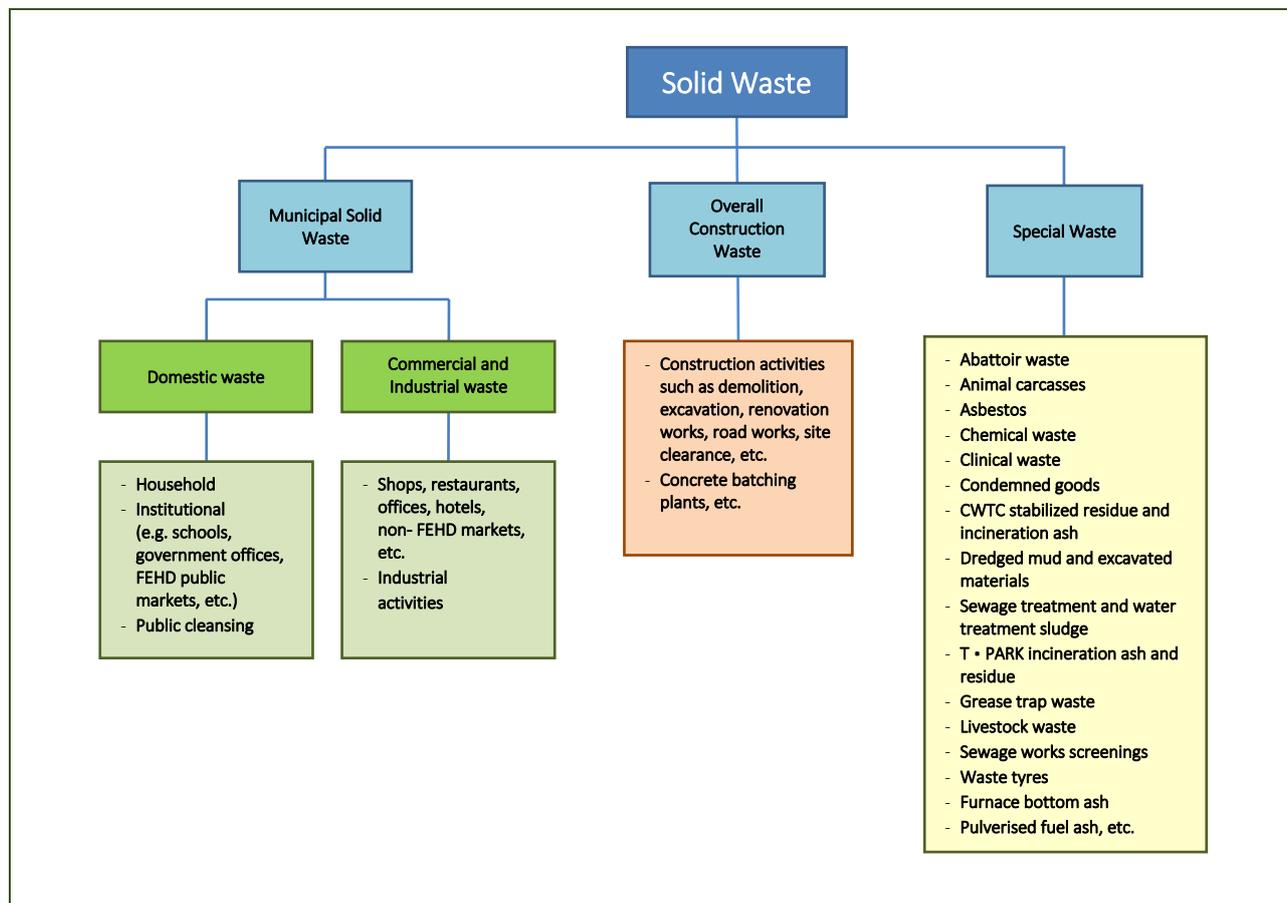
- **Domestic waste** refers to household waste, waste generated from daily activities in institutional premises (e.g. schools, government offices) and refuse collected from public cleansing services. Public cleansing waste includes dirt and litter collected by the Food and Environmental Hygiene Department (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 RTs;
- 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 <sup>1</sup>.

- **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.

$$\begin{aligned} \text{Waste recovery rate} &= \frac{\text{Resource recovery}}{\text{Waste generation}} \times 100\% \\ &= \frac{\text{Resource recovery}}{\text{Waste disposal} + \text{Resource recovery}} \times 100\% \end{aligned}$$

- **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:

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

<sup>1</sup> The terminology applies to municipal solid waste (MSW) and overall construction waste only.