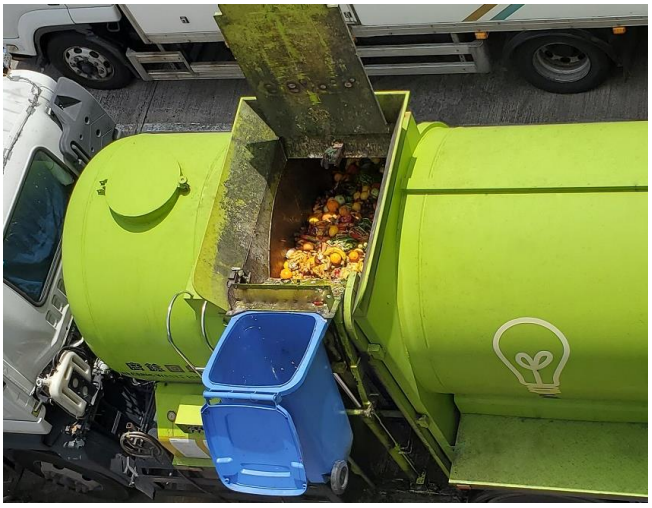
MONITORING OF SOLID WASTE IN HONG KONG

Waste Statistics for 2020



Environmental Protection Department

Monitoring of Solid Waste in Hong Kong
Waste Statistics for 2020

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Cover photos

Top left:	**Reverse Vending Machine (RVM) under the RVM Pilot Scheme**
Bottom left:	**A private recycling plant for waste electronic and computer equipment in EcoPark**
Top right:	**Recycling Store at Sai Ying Pun under the Community Recycling Network**
Bottom right:	**Food Waste Collection Vehicle under the Pilot Scheme on Food Waste Collection**

Contents

Abbreviations

AFCD	Agriculture, Fisheries and Conservation Department
AWCP	Animal Waste Composting Plant
C&D	Construction and Demolition
C&SD	Census and Statistics Department
CEDD	Civil Engineering and Development Department
CWTC	Chemical Waste Treatment Centre
EPD	Environmental Protection Department
FEHD	Food and Environmental Hygiene Department
FWPF	Food Waste Pre-Treatment Facilities
GMC	Glass Management Contractor
IETS	Island East Transfer Station
IWTS	Island West Transfer Station
MSW	Municipal Solid Waste
N/A	Not Available
NENT	North East New Territories Landfill
NLTS	North Lantau Transfer Station
NT	New Territories
NWNTTS	North West New Territories Transfer Station
OITF	Outlying Islands Transfer Facilities
O·PARK	Organic Resources Recovery Centre
PET	Polyethylene Terephthalate
RTS(s)	Refuse Transfer Station(s)
SENT	South East New Territories Landfill
STTS	Shatin Transfer Station
tpd	tonnes per day
T ▪ PARK	Sludge Treatment Facility
WEEE	Waste electrical and electronic equipment
WEEE·PARK	WEEE Treatment and Recycling Facility
WENT	West New Territories Landfill
WKTS	West Kowloon Transfer Station
Y ▪ PARK	Yard Waste Recycling Centre

1. Introduction

Introduction

This report presents the statistics on disposal and recovery/recycling of solid waste generated in Hong Kong in 2020. 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 Waste Management System of Hong Kong are elaborated in Appendix 2.

The COVID-19 pandemic has affected the methodology of the statistical surveys. Conducting the sample waste composition survey involves disassembling the bags of waste delivered to treatment facilities one by one and waste sorting by hand on the spot. For the year of 2020, taking into account the pandemic situation and staff safety, no manual waste composition survey by taking samples at waste treatment facilities was conducted and waste composition in 2020 was estimated by statistical analysis based on the historical time series of composition of waste disposal. Meanwhile, reference has been made to changes in economic and social indicators in 2020 and fine-tuning has been performed accordingly. Such methods are in line with scientific principles and practical needs, and the estimates obtained are of practical reference value.

Key observations of the local waste disposal and resource recovery scene 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.

Waste Disposal in 2020

Total Solid Waste

Solid waste comprises municipal solid waste (MSW), overall construction waste, and special waste. In 2020, the total quantity of solid waste disposed of at the strategic landfills was 5.39 million tonnes. The average daily quantity was 14,739 tonnes per day (tpd), which has decreased by 5.7% as compared to 2019 (**Plate 2.1**).

Municipal Solid Waste

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

In 2020, the quantity of MSW disposed was 10,809 tpd (3.96 million tonnes), which represented a decrease of 2.2% as compared to 2019. The reduction was partly attributed to

the threat of the COVID-19 pandemic, which affected local consumption and economic activities and the associated waste disposal. Discounting the factor of population growth, the disposal rate of MSW was 1.44 kg/person/day, as compared to 1.47 kg/person/day in 2019.

The major component of MSW is domestic waste. Its quantity of disposal was 6,844 tpd (2.50 million tonnes) in 2020, which has increased by 4.4% as compared to 2019. On the other hand, the quantity of C&I waste disposed of was 3,965 tpd (1.45 million tonnes) in 2020, which has decreased by 12.0% when compared to 2019. The statistics mainly reflected the fact that under the COVID-19 pandemic, people spent a lot more time staying at home to work and dine.

Plates 2.8 and 2.9 show the composition of MSW disposed of at landfills in 2020.

Of the 10,809 tonnes of MSW landfilled each day in 2020, some 3,255 tonnes (30% of MSW) were estimated as ***food waste***, which has decreased by 2.9% as compared to 2019. As people dined out less due to the pandemic, domestic food waste disposal rate was estimated to increase from 0.30 kg/person/day in 2019 to 0.33 kg/person/day in 2020, while C&I food waste disposal rate was estimated to decrease from 0.14 kg/person/day in 2019 to 0.10 kg/person/day in 2020.

The second largest constituent of MSW was ***waste paper***. An estimate of some 2,643 tpd (24% of MSW) were disposed of at landfills in 2020, which has decreased by 2.3% as compared to 2019. The third largest constituent of MSW was ***waste plastics***, estimated with a disposal quantity of 2,312 tpd (21% of MSW) in 2020, which was on par with that of 2019.

Overall Construction Waste

Although the quantity of generation (the sum of disposal and reuse) of construction waste in 2020 was 56,622 tpd (20.72 million tonnes), representing an increase of about 17% as compared with the 2019 level, the quantity transferred for direct reuse registered an increase of about 48% and the amount delivered to public fill reception facilities rose by about 8%. The quantity disposed of at landfills decreased by about 13% to 3,418 tpd (1.25 million tonnes) in 2020. The recovery rate of construction materials rose from 92% in 2019 to 94% in 2020. In addition, the increase in construction waste disposal charges with effect from April 2017 to enhance the incentive for the trade to reduce and reuse construction and demolition materials also has a positive impact on waste reduction. Inert materials were delivered to the public fill reception facilities and other outlets for beneficial direct reuse.

Special Waste

In 2020, the quantity of special waste disposed of at landfills was 513 tpd (0.19 million tonnes), which has decreased by 19.2% as compared to 2019. The decline was mainly driven by the decrease in condemned goods, including confiscated goods collected by other government departments in performing their duties. 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 92% in disposal of dewatered sludges at landfills in 2020 as compared with 2014. On average, 1,034 tonnes of dewatered sewage sludges per day was treated at the T ▪ PARK in 2020.

Resource Recovery in 2020

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 quantity of MSW recovered for local recycling was about 230 000 tonnes in 2020, representing an increase of about 11% compared to about 200 000 tonnes in 2019 (**Plate 3.5**). With the EPD expanding the community recycling network and strengthening various waste reduction and recovery measures, the quantities of locally recycled plastics and food waste increased by about 27% and 19% respectively. However, the quantity of waste glass (mainly glass containers) recovered for local recycling dropped by about 34%, which was likely mainly attributed to the impact of the COVID-19 pandemic on bars and the catering industry. (**Plate 3.11**)

Among the various types of recyclables, *plastic recyclables'* recovery rate increased from 8% in 2019 to 11% in 2020. The local recycling industry has gradually shifted its mode of operation in response to tightening of import control by importing economies. Coupled with the various new measures implemented by the government to further promote waste plastic recovery, including the Plastic Recycling Pilot Scheme, the quantity of plastic recyclables recycled locally rose significantly from 74,400 tonnes in 2019 to 94,700 tonnes in 2020. 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.

The quantity of *food waste* recycled locally increased markedly from 46,000 tonnes in 2019 to 54,700 tonnes in 2020. 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. These facilities help promote food waste recycling.

Recovery rate of *waste electrical and electronic equipment (WEEE)* rose from 69% in 2019 to 71% in 2020. The recyclable value of WEEE is relatively high which attracts local recyclers to actively engage in WEEE recovery. The full commissioning of the Government's WEEE Treatment and Recycling Facility (WEEE·PARK) in March 2018 and other initiatives under the producer responsibility scheme on WEEE further promoted beneficial recycling and reuse of the regulated WEEE.

While the quantity of MSW recovered for local recycling continued to rise, the quantity delivered outside Hong Kong for recycling dropped from about 1.44 million tonnes in 2019 to about 1.31 million tonnes in 2020. The change reflects the persistent challenging condition of the market outside Hong Kong for recyclables and the increasing impact of stricter import controls imposed by nearby jurisdictions.

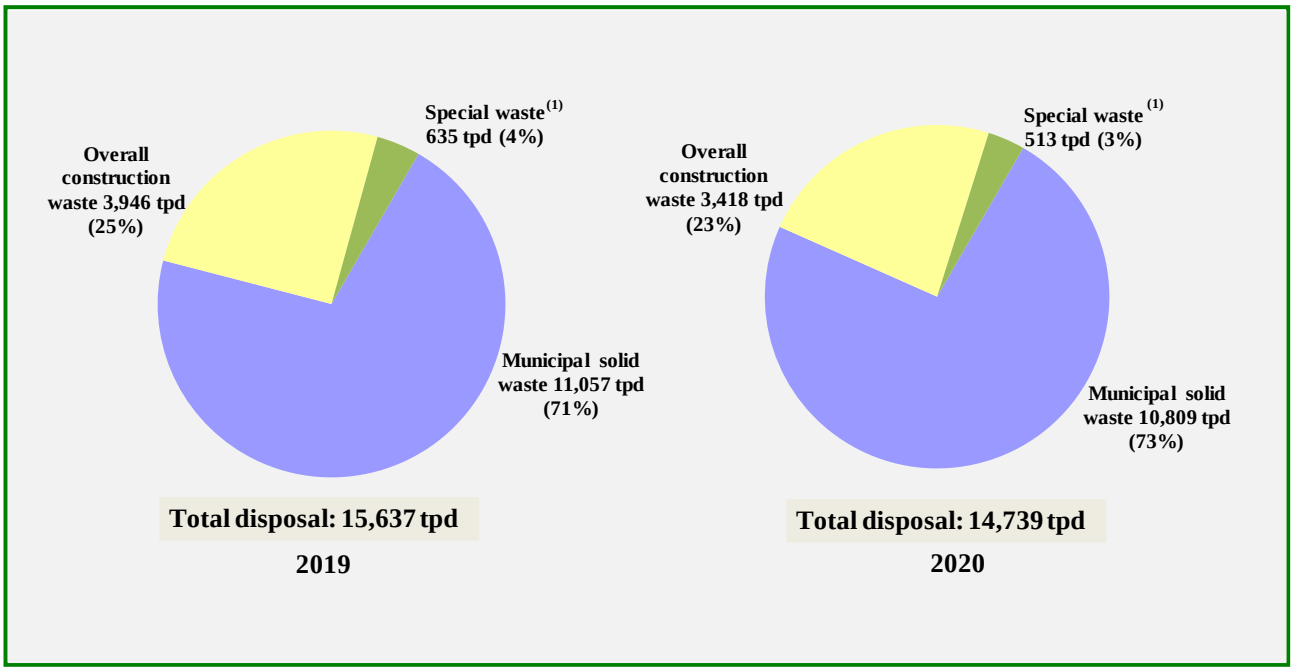
2. Waste Quantities and Characteristics

Plate 2.1 Disposal of total solid waste at landfills in 2020 - By main waste category

Waste category[1]	Average daily quantity (tpd) and year-on-year growth rate	
a. Municipal solid waste	**10,809**	(-2.2%)
(i) Domestic waste	**6,844**	(4.4%)
(ii) Commercial and industrial waste	**3,965**	(-12.0%)
b. Overall construction waste	**3,418**	(-13.4%)
c. Special waste[2]	**513**	(-19.2%)
d. Total waste received at landfills (a+b+c)	**14,739**	**(-5.7%)**

Notes:
(1) Please refer to Appendix 1 for 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.

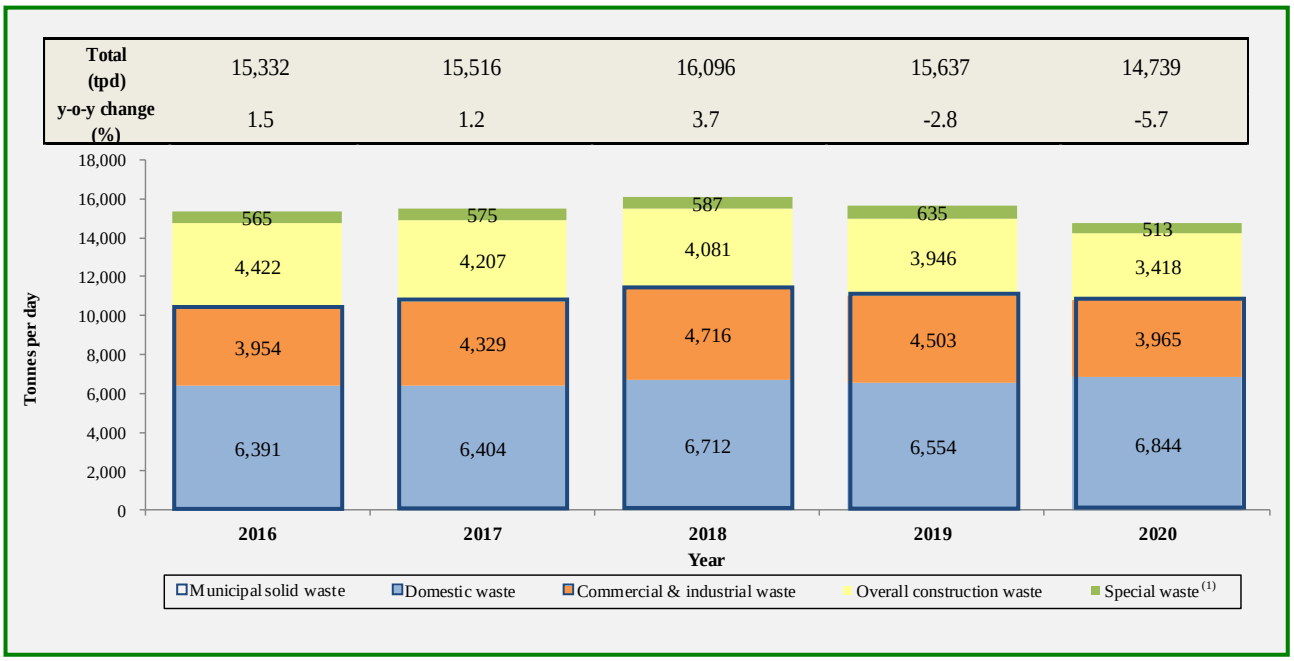
Plate 2.2 Disposal of total solid waste at landfills in 2019 and 2020 - By main waste category



Note:

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

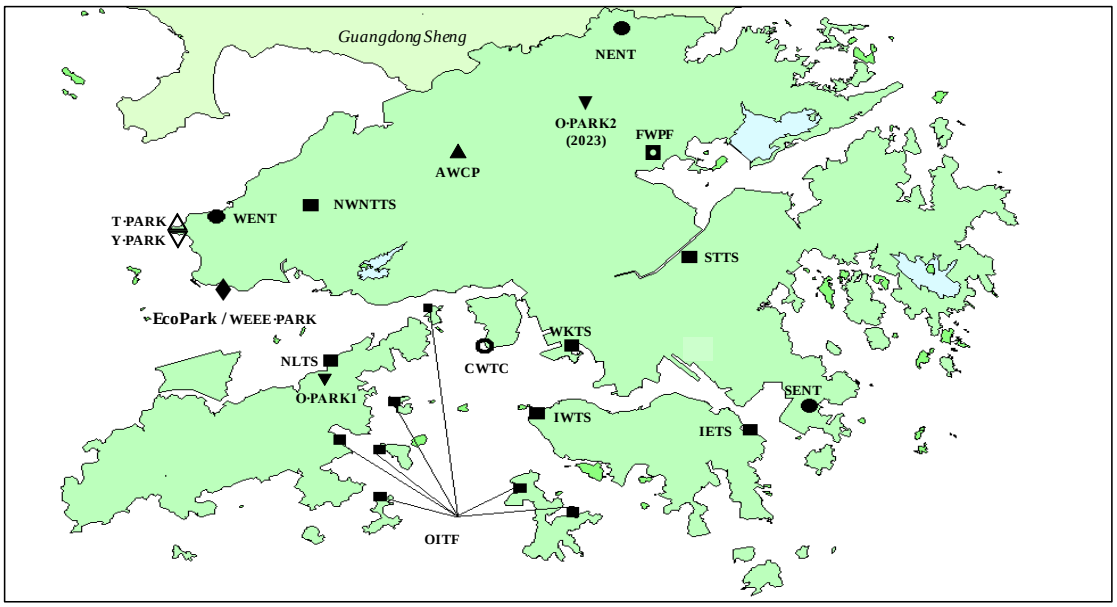
Plate 2.3 Disposal of total solid waste at landfills from 2016 to 2020 - By main waste category



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 SENT - South East New Territories Landfill(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)
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(4)
Sludge Treatment Facility	△	T ▪ PARK(5)
Yard Waste Recycling Centre	▽	Y ▪ PARK(6)
FWPF	◘	Food Waste Pre-Treatment Facilities under Food Waste/Sewage Sludge Anaerobic Co-digestion Trial Scheme

Notes:

(1) From 6 January 2016 onwards, SENT Landfill has been designated to accept only 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 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 horiculture use. O·PARK2 at Sha Ling is scheduled for commissioning in 2023.

(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.

Plate 2.5 Total solid waste received by RTSs and landfills in 2020 - By main waste category

Disposal facility - RTS	Average daily quantity (tpd) and year-on-year growth rate							
	MSW		Overall construction waste		Special waste[1]		Total	
IETS - Island East Transfer Station	1,073	(-9.6%)	-	-	-	-	1,073	(-9.6%)
IWTS - Island West Transfer Station	1,043	(-4.9%)	-	-	-	-	1,043	(-4.9%)
WKTS - West Kowloon Transfer Station	2,548	(-6.0%)	-	-	493	(-8.3%)	3,041	(-6.4%)
OITF - Outlying Islands Transfer Facilities	92	(8.4%)	23	(-29.1%)	4	(1.0%)	118	(-1.8%)
NLTS - North Lantau Transfer Station	583	(-10.7%)	-	-	0	(-51.3%)	583	(-10.8%)
STTS - Shatin Transfer Station	1,639	(1.7%)	-	-	-	-	1,639	(1.7%)
NWNTTS - North West New Territories Transfer Station	1,285	(0.5%)	-	-	-	-	1,285	(0.5%)

Disposal facility - Landfill	Average daily quantity (tpd) and year-on-year growth rates							
	MSW		Overall construction waste		Special waste[1]		Total	
WENT - West New Territories Landfill[2]	5,921	(-21.3%)	194	(-63.0%)	260	(-24.8%)	6,375	(-24.0%)
SENT - South East New Territories Landfill[3]	-	-	2,001	(-3.1%)	-	-	2,001	(-3.1%)
NENT - North East New Territories Landfill[2]	4,888	(38.2%)	1,224	(-9.7%)	252	(-12.6%)	6,363	(22.8%)
Landfills' total	10,809	(-2.2%)	3,418	(-13.4%)	513	(-19.2%)	14,739	(-5.7%)

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 6 January 2016 onwards, SENT Landfill has been designated to accept only C&D waste.

(4) Figures less than 0.5 tpd are 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 2020 - By district by 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	271	211	482	97
Eastern	459	99	558	85
Southern	223	40	263	88
Wan Chai	178	38	216	115
Hong Kong Island Sub-total	**1,131**	**388**	**1,519**	**384**
Kowloon City	309	81	390	146
Kwun Tong	541	190	730	210
Sham Shui Po	421	82	503	136
Wong Tai Sin	328	65	393	47
Yau Tsim Mong	535	244	779	152
Kowloon Sub-total	**2,133**	**662**	**2,795**	**691**
Kwai Tsing	346	489	835	230
North	343	508	851	215
Sai Kung	366	49	415	727
Sha Tin	516	444	960	118
Tai Po	326	139	464	165
Tsuen Wan	244	208	452	37
Tuen Mun	507	328	835	605
Yuen Long	747	638	1,384	90
NT- Mainland Sub-total	**3,395**	**2,802**	**6,196**	**2,186**
Cheung Chau	24	0	24	-
Hei Ling Chau	2	0	2	-
Lamma Island	8	0	8	-
Ma Wan	29	0	29	-
Mui Wo	20	0	20	-
Lantau[5]	98	113	210	-
Peng Chau	6	0	6	-
NT-Outlying Islands Sub-total	**185**	**113**	**298**	**156[4]**
Total	**6,844**	**3,965**	**10,809**	**3,418**

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.

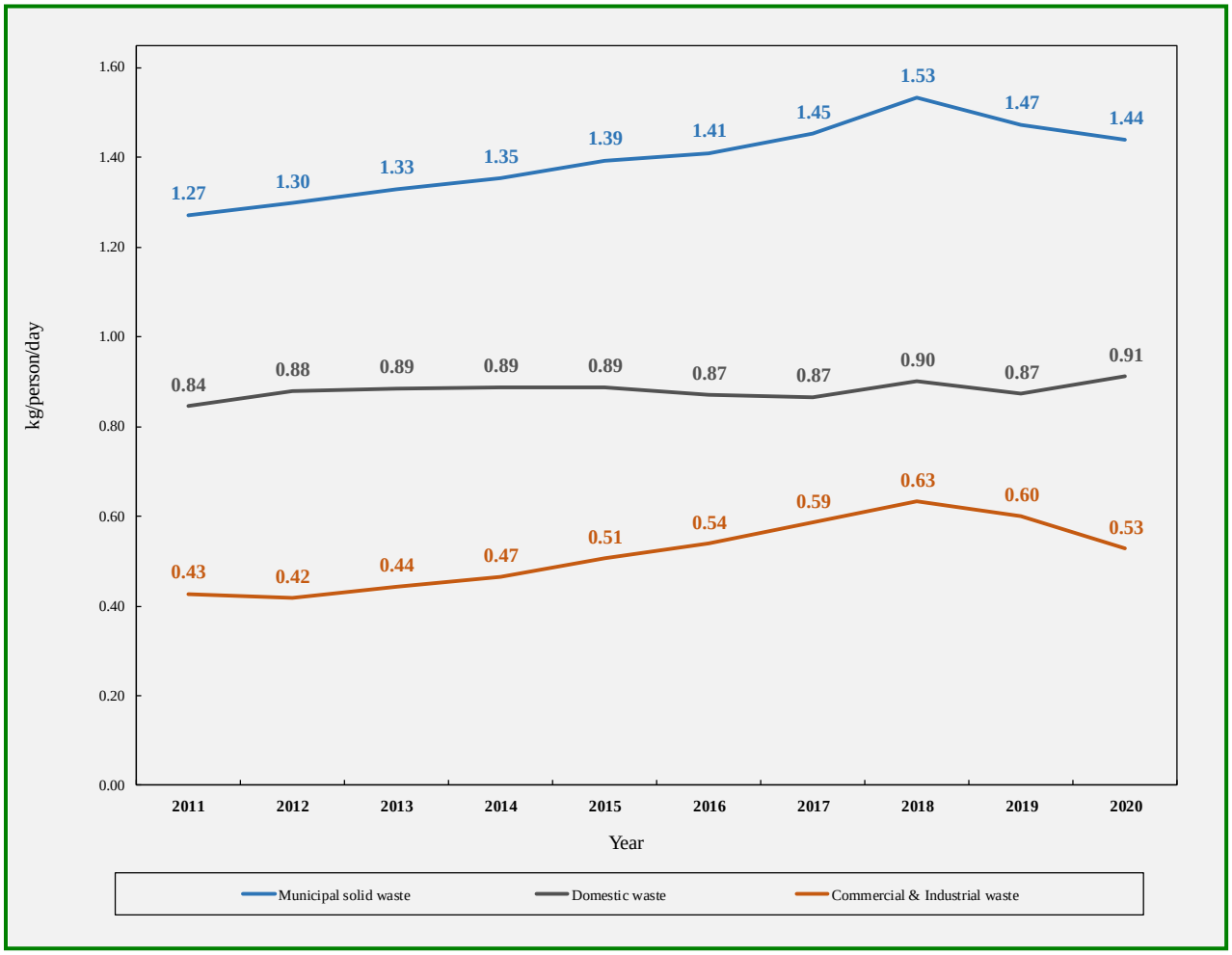
(2) Special waste is not included.

(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 of MSW, domestic waste and commercial & industrial waste from 2011 to 2020



Note:

(1) The per capita disposal rates are calculated based on the population data (mid-year) updated by the C&SD in August 2021.

Plate 2.8 Estimated composition of MSW disposed of at landfills in 2020 - By waste type

Composition	Average daily quantity (tpd) and percentage shares by weight		
	Domestic waste (a)	Commercial & industrial waste (b)	Municipal solid waste (c)=(a)+(b)
Glass	**128** (1.9%)	**55** (1.4%)	**183** (1.7%)
Metals	**117** (1.7%)	**121** (3.0%)	**238** (2.2%)
Paper	**1,475** (21.5%)	**1,169** (29.5%)	**2,643** (24.5%)
Plastics	**1,318** (19.3%)	**994** (25.1%)	**2,312** (21.4%)
Putrescibles	**2,656** (38.8%)	**822** (20.7%)	**3,477** (32.2%)
Textiles	**163** (2.4%)	**79** (2.0%)	**242** (2.2%)
Wood	**71** (1.0%)	**274** (6.9%)	**345** (3.2%)
Household hazardous wastes (HHWs)(1)	**63** (0.9%)	**44** (1.1%)	**107** (1.0%)
Others(2)	**853** (12.5%)	**408** (10.3%)	**1,262** (11.7%)
Total	**6,844 (100%)**	**3,965 (100%)**	**10,809 (100%)**

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.

Plate 2.9 Estimated composition of MSW disposed of at landfills in 2020 – By major waste type

Composition[1]	Average daily quantity (tpd) and percentage shares by weight					
	Domestic waste (a)		Commercial & industrial waste (b)		Municipal solid waste (c) = (a) + (b)	
Glass						
- Glass bottles	**118**	(1.7%)	**38**	(1.0%)	**156**	(1.4%)
- Other glass	**10**	(0.1%)	**17**	(0.4%)	**27**	(0.3%)
(Glass) Sub-total	**128**	**(1.9%)**	**55**	**(1.4%)**	**183**	**(1.7%)**
Metals						
- Ferrous metals	**91**	(1.3%)	**103**	(2.6%)	**194**	(1.8%)
- Non-ferrous metals	**26**	(0.4%)	**18**	(0.4%)	**44**	(0.4%)
(Metals) Sub-total	**117**	**(1.7%)**	**121**	**(3.0%)**	**238**	**(2.2%)**
Paper						
- Cardboard / Newsprint / Office paper	**490**	(7.2%)	**573**	(14.4%)	**1,062**	(9.8%)
- Tetrapak	**42**	(0.6%)	**24**	(0.6%)	**66**	(0.6%)
- Others[2]	**943**	(13.8%)	**572**	(14.4%)	**1,515**	(14.0%)
(Paper) Sub-total	**1,475**	**(21.5%)**	**1,169**	**(29.5%)**	**2,643**	**(24.5%)**
Plastics						
- Plastic bags	**537**	(7.8%)	**267**	(6.7%)	**804**	(7.4%)
- Plastic bottles	**118**	(1.7%)	**61**	(1.5%)	**179**	(1.7%)
- Plastic / Polyfoam dining wares	**189**	(2.8%)	**77**	(1.9%)	**266**	(2.5%)
- Others[3]	**474**	(6.9%)	**588**	(14.8%)	**1,063**	(9.8%)
(Plastics) Sub-total	**1,318**	**(19.3%)**	**994**	**(25.1%)**	**2,312**	**(21.4%)**
Putrescibles						
- Food waste	**2,477**	(36.2%)	**778**	(19.6%)	**3,255**	(30.1%)
- Yard waste	**178**	(2.6%)	**43**	(1.1%)	**222**	(2.1%)
(Putrescibles) Sub-total	**2,656**	**(38.8%)**	**822**	**(20.7%)**	**3,477**	**(32.2%)**

Notes:

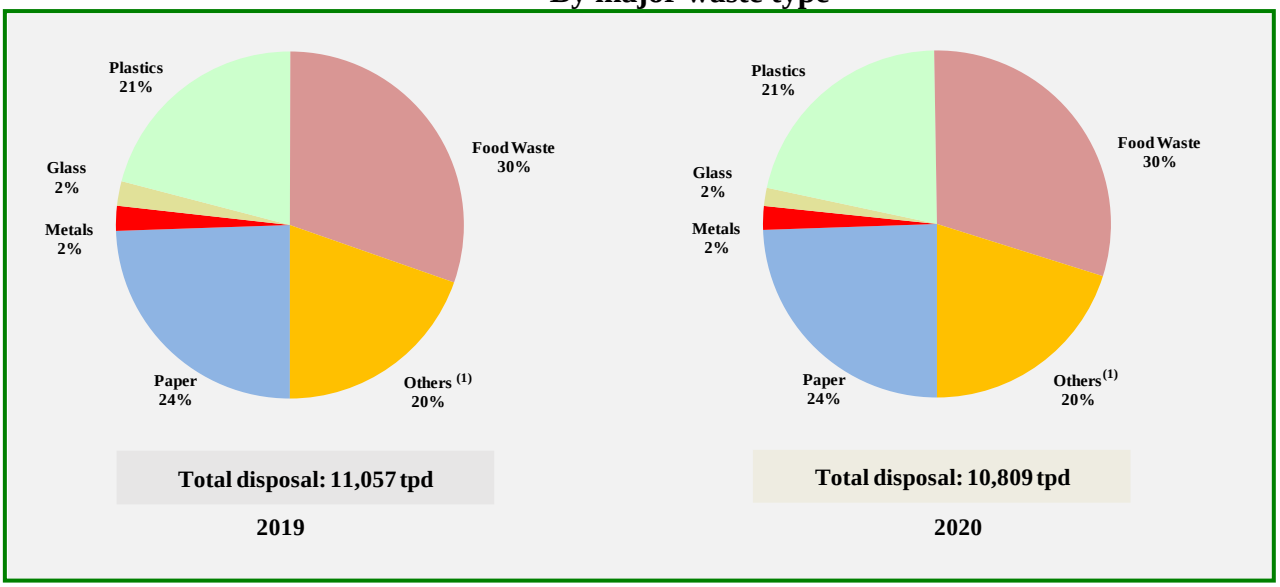
(1) The waste classification was simpified starting from 2020 by making reference to practices of other economies and grouping waste types with similar natures to enhance the precision of estimation.

(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.

Plate 2.10 Composition of MSW disposed of at landfills in percentages in 2019 and 2020 – By major waste type



Note:

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

Plate 2.11 Composition of municipal food waste disposed of at landfills in percentages in 2019 and 2020 - By waste category

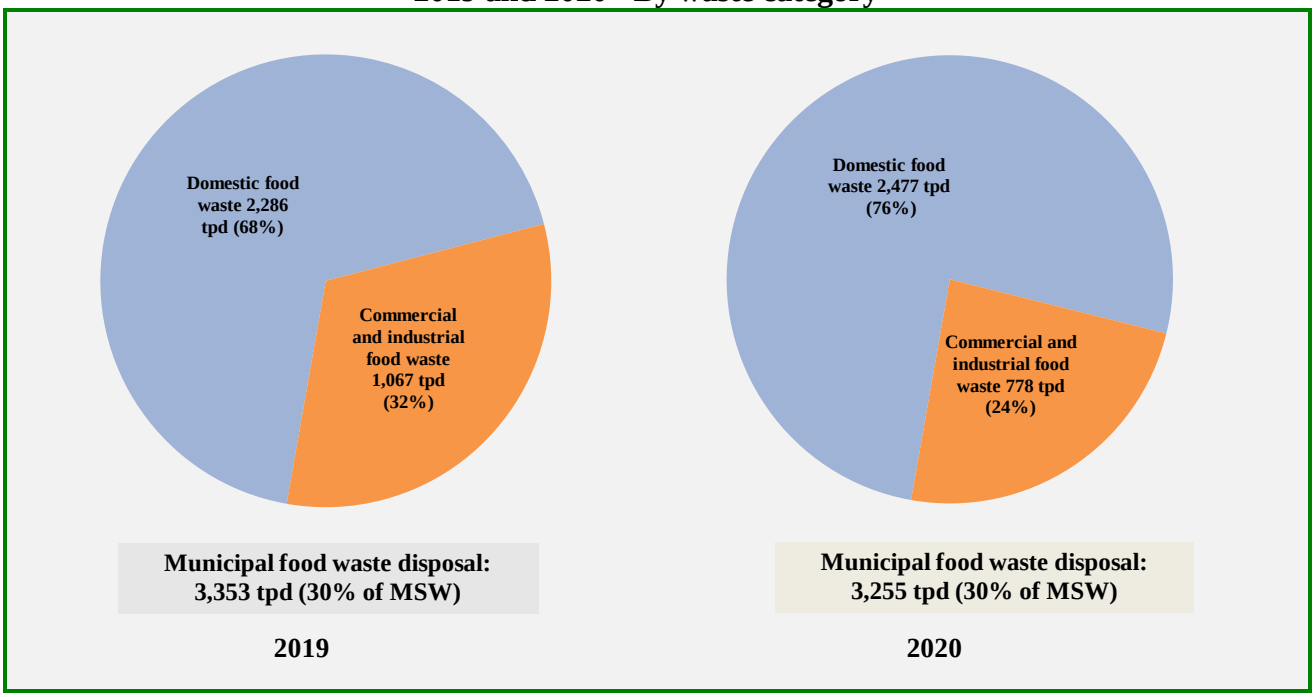
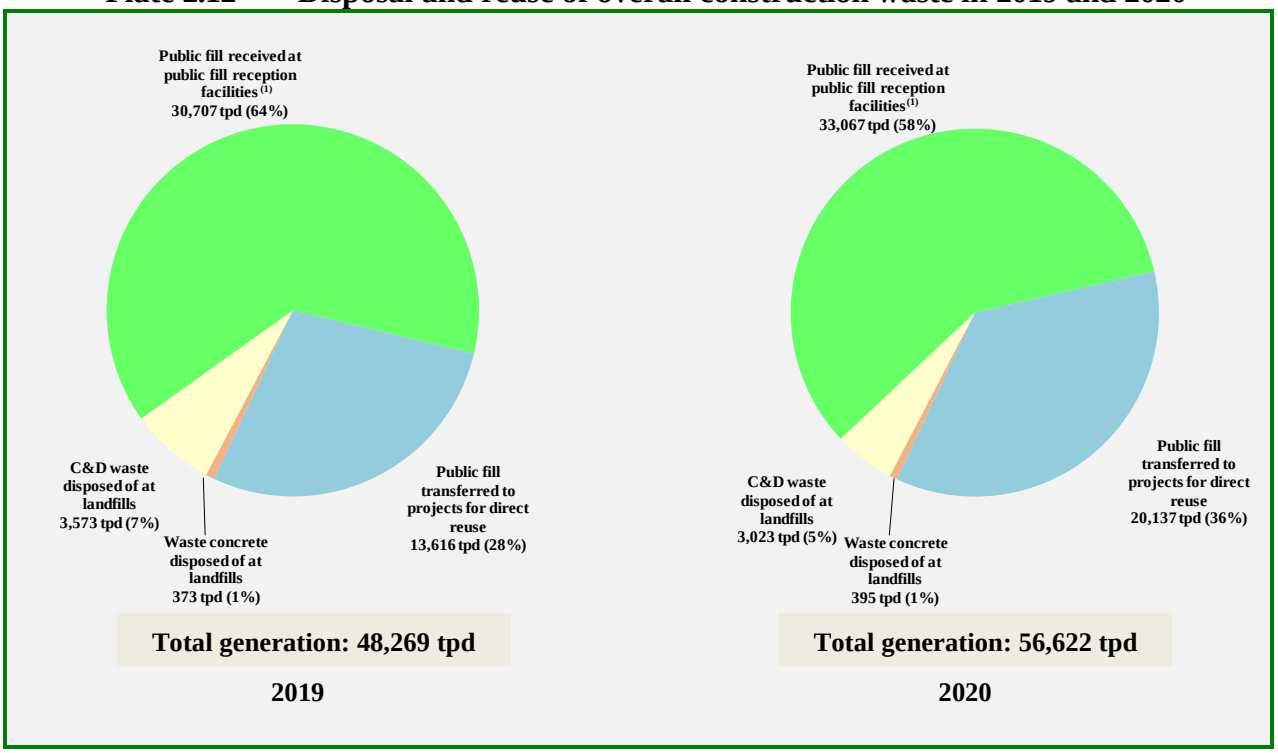


Plate 2.12 Disposal and reuse of overall construction waste in 2019 and 2020



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 2020 - By special waste type

Special waste type	Average daily quantity[1] (tpd)	
Abattoir waste	**5**	(-32.7%)
Animal carcasses and kennel waste	**4**	(-46.7%)
Asbestos waste	**3**	(4.7%)
Chemical waste other than asbestos waste	**5**	(-17.2%)
Clinical waste (with package material) [2]	**3**	(286.0%)
Condemned goods	**18**	(-80.2%)
Dewatered dredged materials	**4**	(0.3%)
Dewatered sludges[3]	**65**	(-36.4%)
Dewatered waterworks sludge	**75**	(15.5%)
Incineration ash and stabilised residue	**137**	(-8.6%)
Livestock waste[4]	**69**	(1.3%)
Sewage works screenings	**72**	(5.1%)
Waste tyres[5]	**52**	(-14.8%)
Disposal at Landfills Sub-total	**513**	**(-19.2%)**

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 2020, the generation of livestock waste amounted to 160 tpd, out of which 69 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) 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 in 2020 (Not disposed of at landfills) - By special waste type

Special waste type	Treatment method	Average daily quantity[1] (tpd)	
Chemical waste other than asbestos waste	**CWTC**	**34**	(-5.8%)
Clinical waste	**CWTC**	**8**	(16.6%)
Grease trap waste	**WKTS[2]**	**493**	(-8.3%)
Horse stable waste	**AWCP**	**26**	(-1.1%)
Dredged mud and excavated materials	**Marine dumping[3]**	**15,574**	(13.7%)
Dewatered sewage sludge[4]	**Incineration at T ▪ PARK**	**1,034**	(-1.7%)
Furnace bottom ash	**Concrete manufacturing, stored in lagoon[5]**	**73**	(-45.0%)
Pulverised fuel ash	**Concrete manufacturing, stored in lagoon[5]**	**759**	(-39.4%)

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.

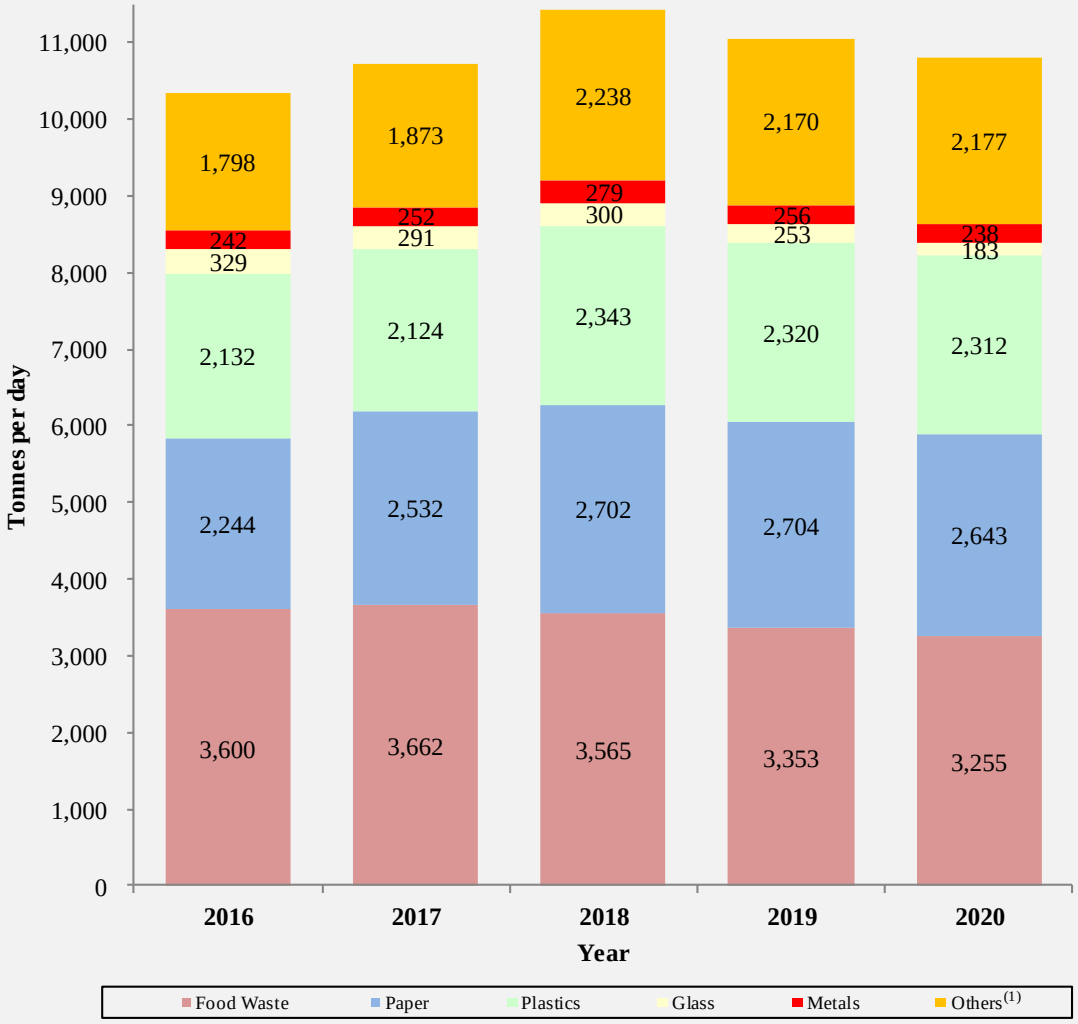
Plate 2.14 Composition of MSW disposed of at landfills in percentages from 2016 to 2020 – By major waste type

Note:

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

Plate 2.15 Composition of MSW disposed of at landfills in quantities from 2016 to 2020 – By major waste type

	2016	2017	2018	2019	2020
Total (tpd)	10,345	10,733	11,428	11,057	10,809
y-o-y change (%)	1.8	3.7	6.5	-3.2	-2.2

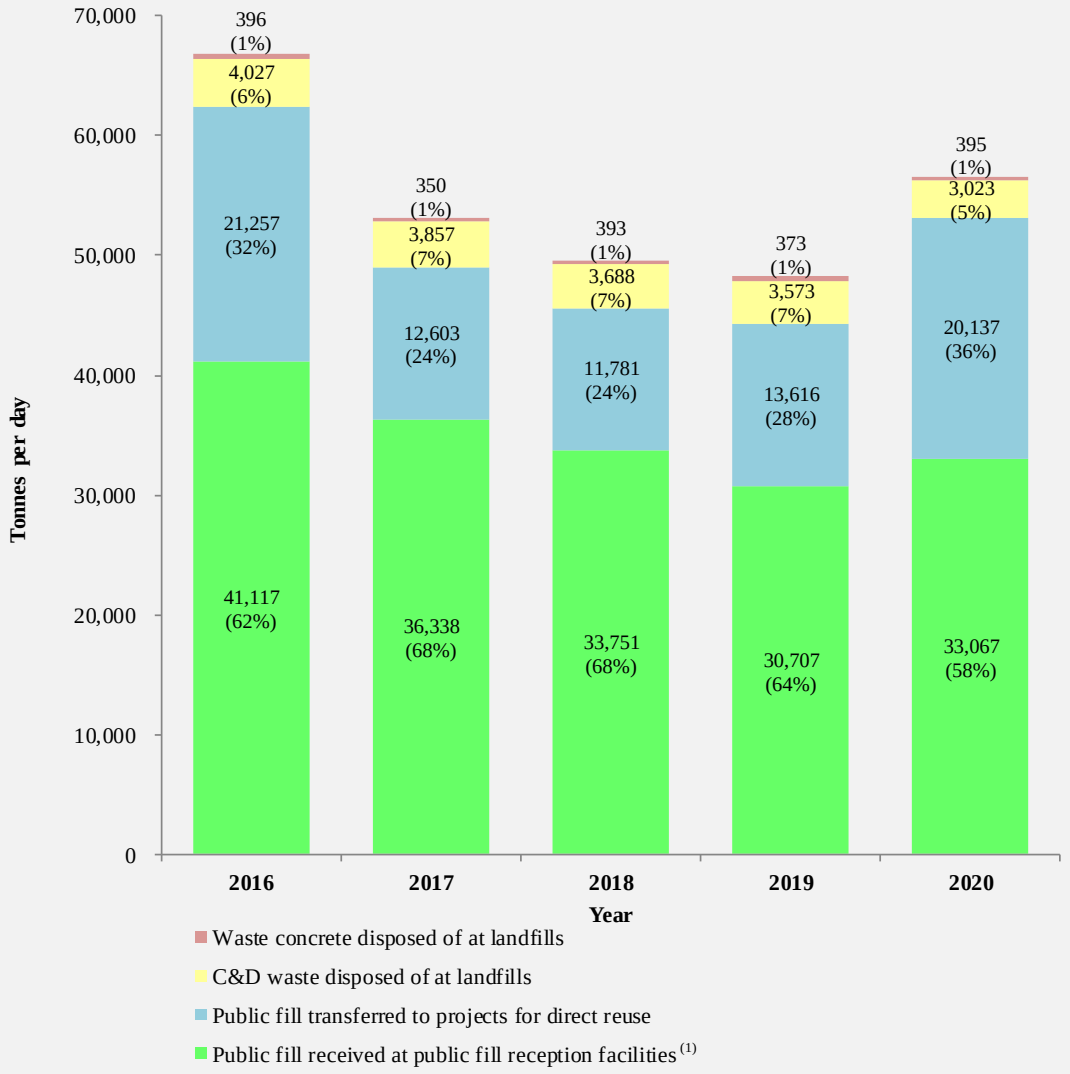


Note:

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

Plate 2.16 Disposal and reuse of overall construction waste from 2016 to 2020

	2016	2017	2018	2019	2020
Total (tpd)	66,796	53,148	49,612	48,269	56,622
y-o-y change (%)	0.3	-20.4	-6.7	-2.7	17.3



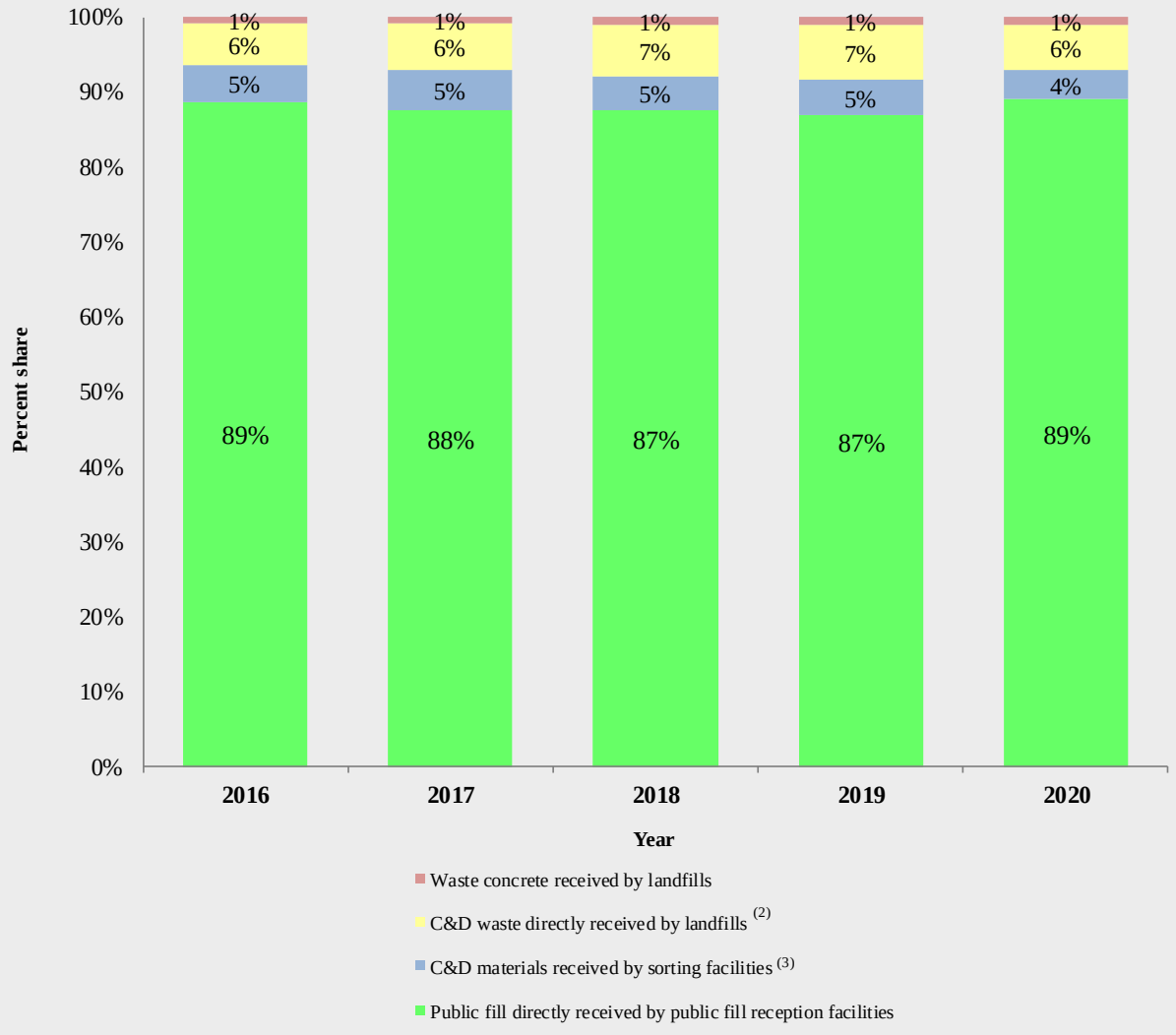
Notes:

(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 from 2016 to 2020

Public fill reception facilities (tpd)	40,395	35,541	33,094	30,081	32,536
Sorting facilities (tpd)	2,191	2,124	1,762	1,670	1,439
Landfills (tpd)	2,940	2,895	2,974	2,894	2,592
Waste concrete (tpd)	*396*	*350*	*393*	*373*	*395*
C&D waste (tpd)	*2,544*	*2,545*	*2,581*	*2,522*	*2,197*



Notes:

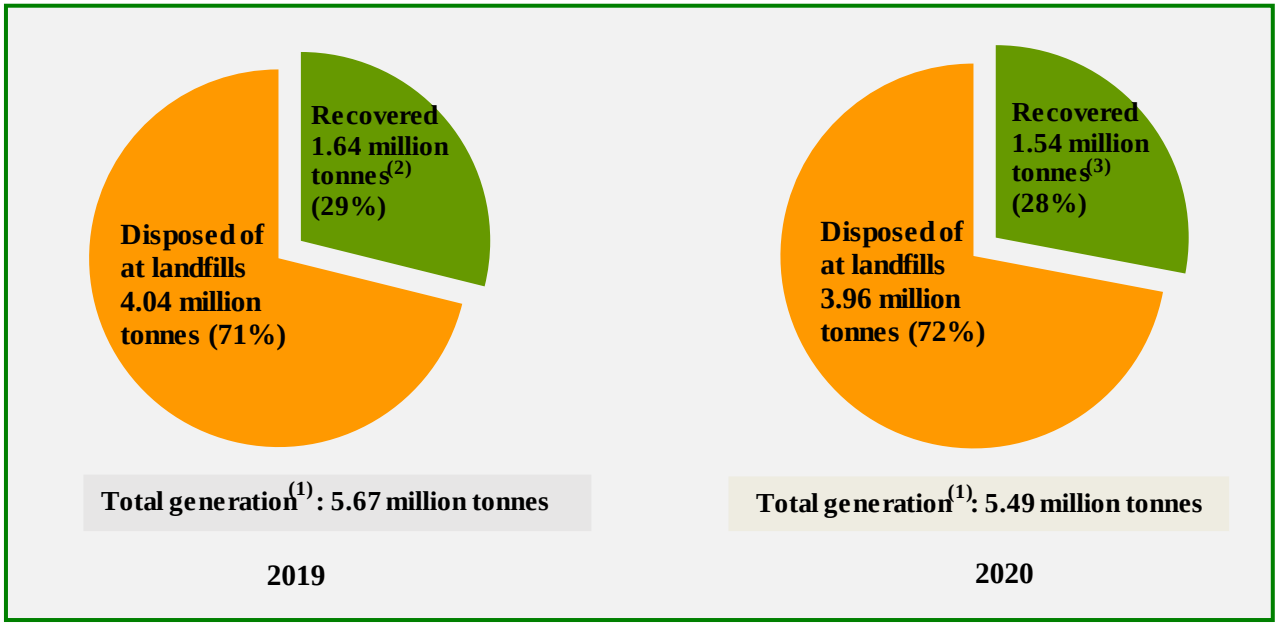
(1) Under the Construction Waste Disposal Charging Scheme, 71 dollars is charged per tonne of public fill disposed of at public fill reception facilities, 175 dollars per tonne of construction waste at sorting facilities and 200 dollars per tonne of construction waste at landfills.

(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.

3. Resource Recovery and Recycling

Plate 3.1 Generation, disposal and recovery of MSW in 2019 and 2020



Notes:

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

(2) A total of 1.64 million tonnes of recyclables were recovered for recycling in 2019, of which, 1.44 million tonnes (88%) were delivered outside Hong Kong for recycling and 0.20 million tonnes (12%) recycled locally.

(3) 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.

Plate 3.2 Recovery rates of MSW, domestic waste, and commercial & industrial waste from 2016 to 2020

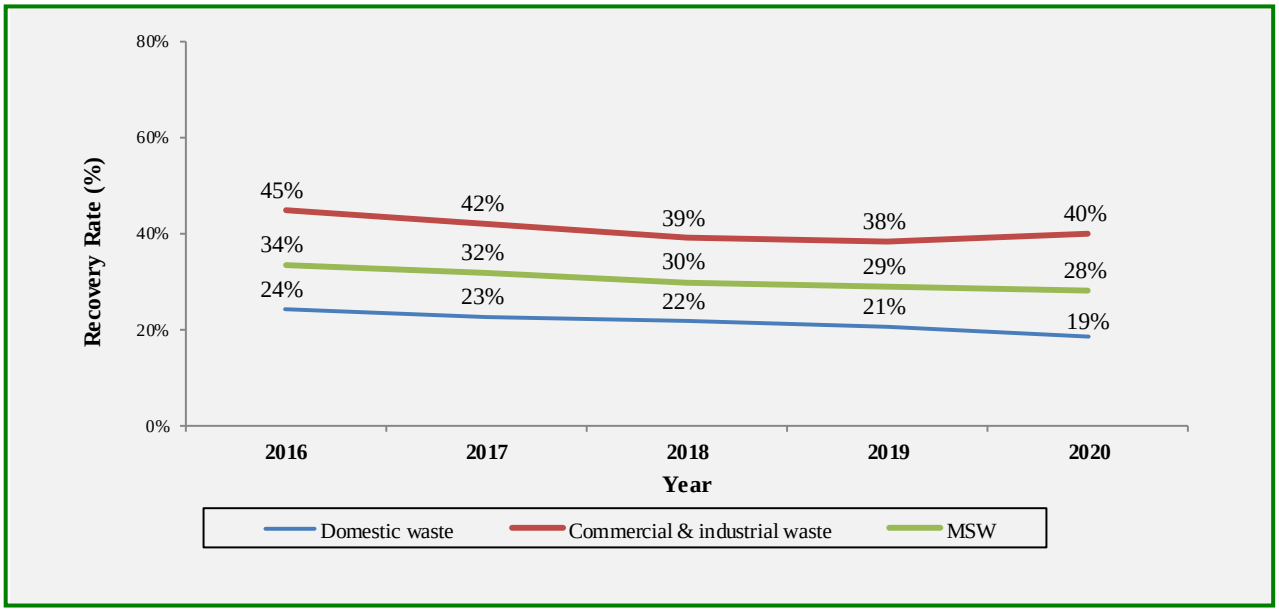


Plate 3.3 Recyclables recovered from MSW in 2020 - By type of recyclable

Recyclable type	Quantity of recovered recyclables (thousand tonnes)					
	Delivered outside Hong Kong for recycling (a)		Recycled locally (b)		Total recovered for recycling (c) = (a) + (b)	
Paper	**442.1**	(33.7%)	**7.9**	(3.5%)	**450.0**	(29.3%)
Plastics	**7.3**	(0.6%)	**94.7**	(42.0%)	**102.0**	(6.6%)
Ferrous metals	**740.5**	(56.4%)	**0.1**	(0.1%)	**740.7**	(48.2%)
Non-ferrous metals	**114.1**	(8.7%)	**1.2**	(0.5%)	**115.3**	(7.5%)
Food waste(1)	**0.0**	(0.0%)	**54.7**	(24.2%)	**54.7**	(3.6%)
Glass(2)	**3.5**	(0.3%)	**11.2**	(5.0%)	**14.7**	(1.0%)
Rubber tyres(3)	**0.0**	(0.0%)	**5.8**	(2.6%)	**5.8**	(0.4%)
Textiles	**0.2**	(0.0%)	**7.1**	(3.1%)	**7.3**	(0.5%)
Wood	**0.0**	(0.0%)	**4.1**	(1.8%)	**4.1**	(0.3%)
Electrical and electronic equipment	**4.3**	(0.3%)	**36.8**	(16.3%)	**41.1**	(2.7%)
Yard waste(4)	**0.0**	(0.0%)	**2.0**	(0.9%)	**2.0**	(0.1%)
Total	**1,312.0**	**(100.0%)**	**225.6**	**(100.0%)**	**1,537.7**	**(100.0%)**

Notes:

(1) The quantity of food waste recycled locally includes those recycled by industrial operators, those recycled at O·PARK, FWPF and OITF, and those recycled by non-government organizations.

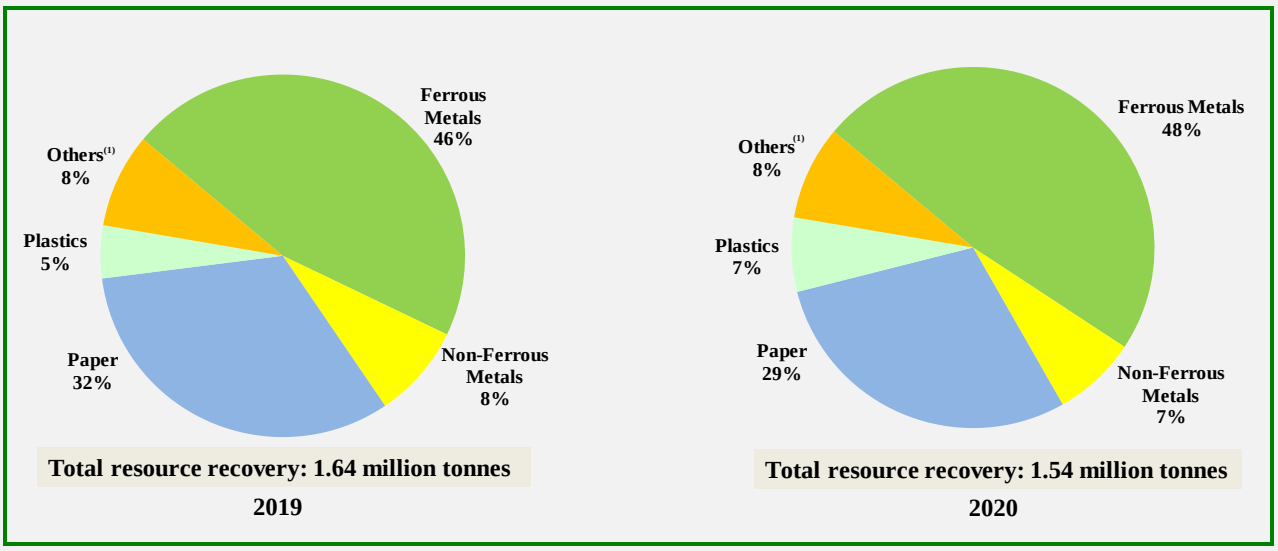
(2) Glass beverage bottles recovered for reuse through deposit-and-refund system operated by local beverage manufacturers are not included.

(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.

(5) Figures less than 50 tonnes are shown as 0.0. Figures in brackets refer to percentage shares.

Plate 3.4 Recyclables recovered from MSW in percentages in 2019 and 2020 - By type of recyclable



Note:

(1) 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 2016 to 2020

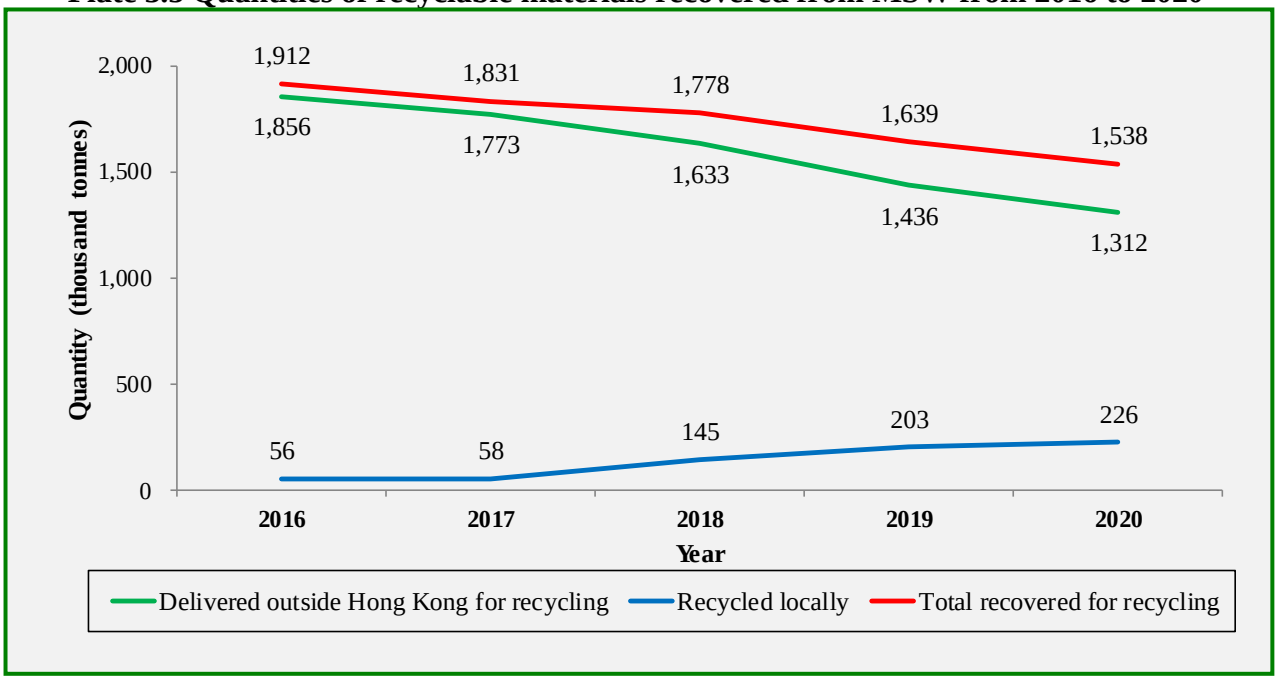
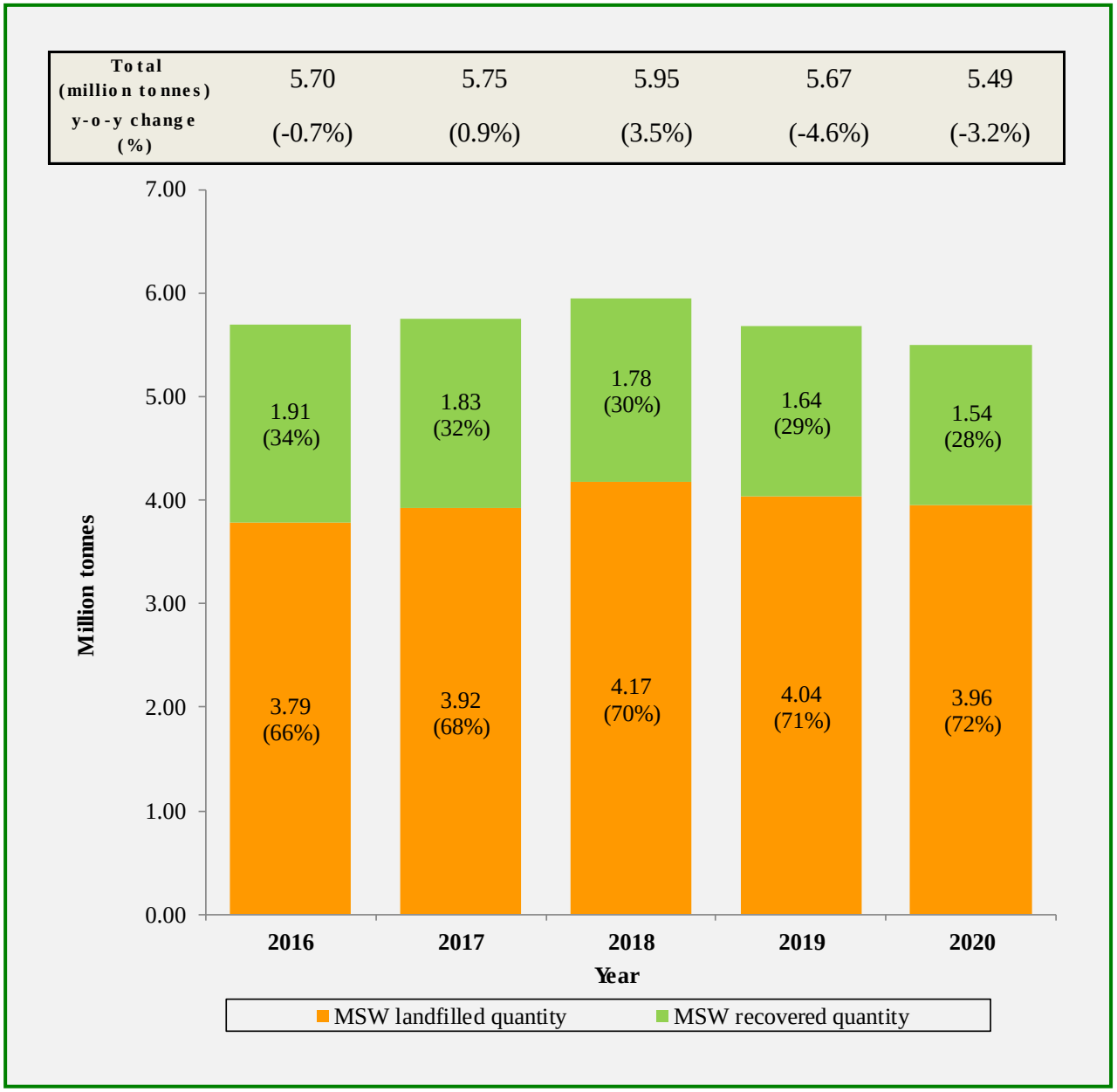


Plate 3.6 Quantities and values of recyclable materials recovered from MSW recycled outside Hong Kong in 2020 - By major type of recyclable material

Recyclable type	Quantity (tonnes)	Value ($ thousand)	Value per unit weight ($ / tonne)
Ferrous metals	**740,534**	**1,665,288**	**2,249**
Non-ferrous metals	**114,057**	**2,605,390**	**22,843**
Plastics	**7,342**	**67,429**	**9,184**
Paper	**442,107**	**629,800**	**1,425**
Textiles	**174**	**886**	**5,091**
Glass	**3,484**	**1,839**	**528**

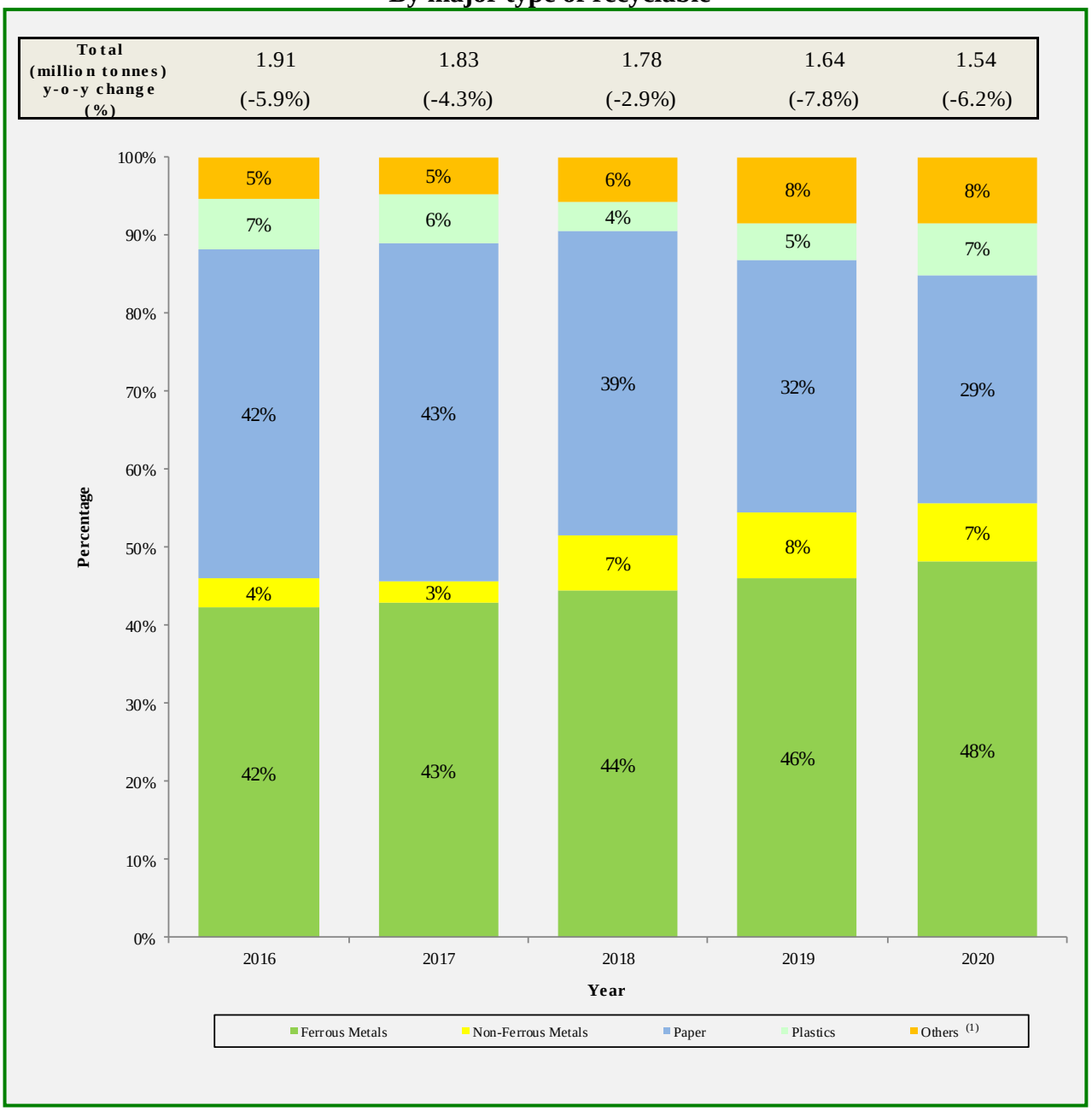
Plate 3.7 Generation, disposal and recovery of MSW from 2016 to 2020



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 2016 to 2020 - By major type of recyclable

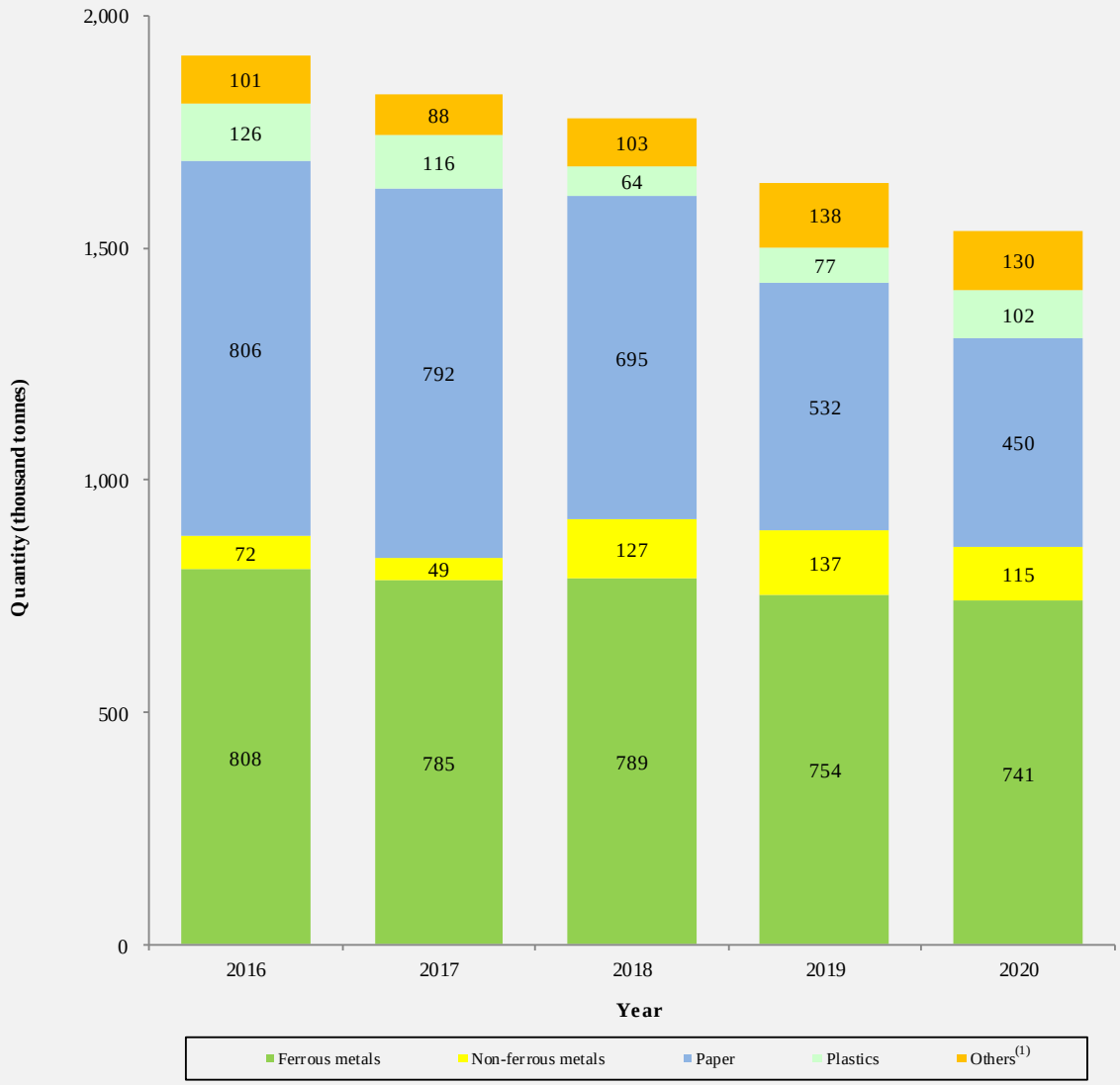


Note:

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

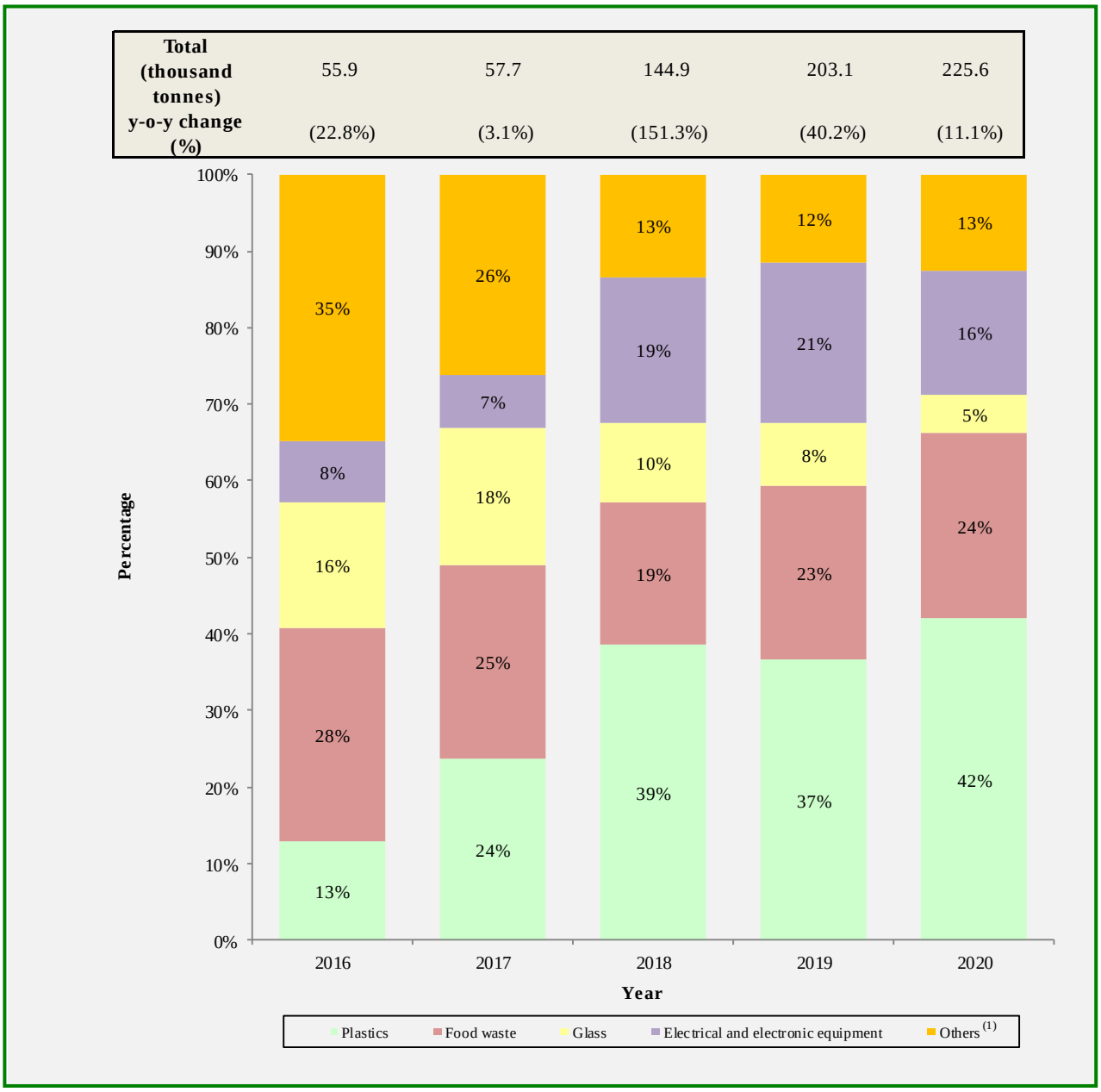
Plate 3.9 Recyclables recovered from MSW in quantities from 2016 to 2020 - By major type of recyclable

Total (million tonnes)	1.91	1.83	1.78	1.64	1.54
y-o-y change (%)	(-5.9%)	(-4.3%)	(-2.9%)	(-7.8%)	(-6.2%)



Note:
(1) Others include glass, wood, rubber tyres, textiles, food waste, electrical and electronic equipment, and yard waste.

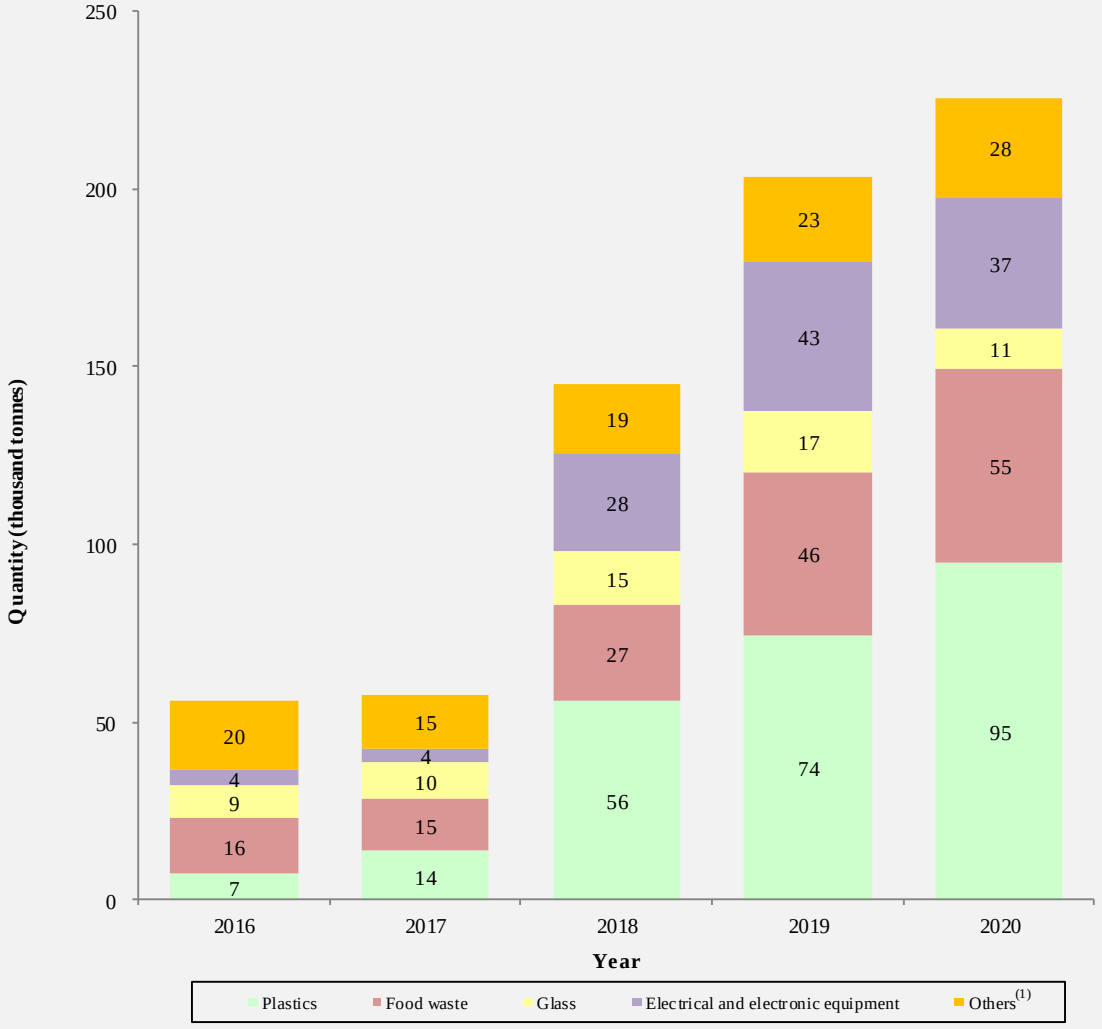
Plate 3.10 Recyclable materials recovered from MSW recycled locally in percentages from 2016 to 2020 – By major type of recyclable material



Note:
(1) Others include paper, metals, wood, rubber tyres, textiles, and yard waste.

Plate 3.11 Recyclable materials recovered from MSW recycled locally in quantities from 2016 to 2020 - By major type of recyclable material

Total (thousand tonnes)	55.9	57.7	144.9	203.1	225.6
y-o-y change (%)	(22.8%)	(3.1%)	(151.3%)	(40.2%)	(11.1%)



Notes:

(1) Others include paper, metals, wood, rubber tyres, textiles, and yard waste.

Appendix 1: Classification of Solid Waste and Monitoring Methodology

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.

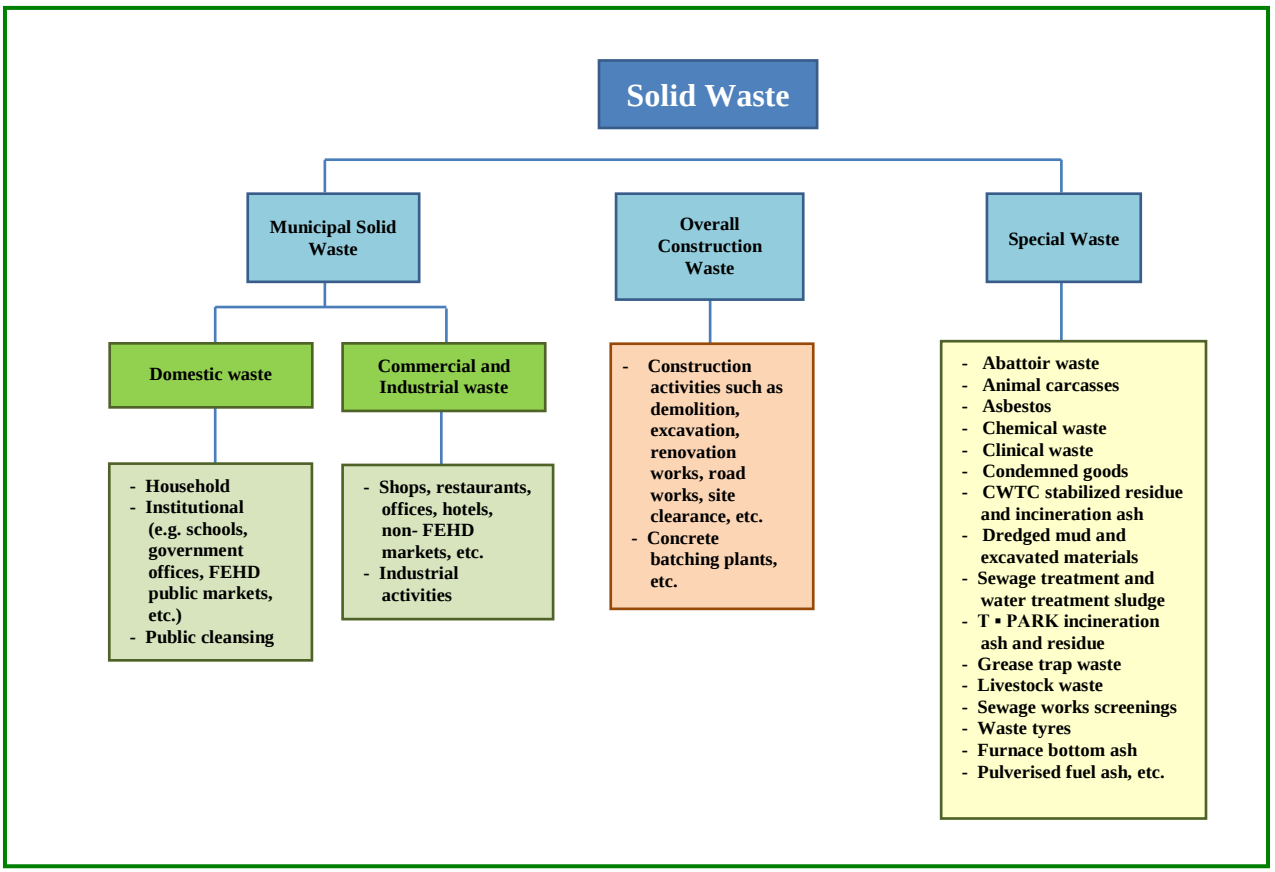
- Municipal solid waste contains a small portion of bulky items such as furniture, pianos and bicycles which cannot be handled by conventional compactor type refuse collection vehicles. These items are regarded as **bulky waste** and are usually collected separately.

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[1] 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.

[1] For the year of 2020, taking into account the pandemic situation and staff safety, no manual waste composition survey by taking samples at waste treatment facilities was conducted and waste composition in 2020 was estimated by statistical analysis based on the historical time series of composition of waste disposal.

Appendix 2: Terminology of Waste Management System

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[2].

- **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.

Waste generation = Waste disposal + 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.

Per capita waste disposal rate = Average daily quantity of waste disposal ÷ mid-year population

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