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ACE-WM Paper 1/2018
For discussion on 20 April 2018

Monitoring of Solid Waste in Hong Kong 2016

INTRODUCTION

This paper presents the statistics on disposal and recovery/recycling of solid waste generated in Hong Kong in 2016.

WASTE DISPOSAL

Total solid waste

2. Total solid waste includes municipal solid waste (MSW), overall construction waste, dewatered sludge and others. Within MSW, there are three waste categories, namely: domestic waste, commercial waste and industrial waste.

3. In 2016, the total quantity of solid waste disposed of at the strategic landfills was 15,332 tonnes per day (tpd) (corresponding to an annual quantity of 5.61 million tonnes), which has increased by 1.5% as compared to 2015. **Table 1** below shows the disposal quantities of various components of total solid waste and their annual growth rates.

Table 1: Disposal of solid waste at landfills

Solid waste	Disposal quantity (tpd)		Year-on-year change (%) [1]
	2015	2016	
Municipal Solid Waste	10,159	10,345	+1.8%
● *Domestic waste*	*6,464*	*6,391*	*-1.1%*
● *Commercial and Industrial Waste*	*3,694*	*3,954*	*+7.0%*
Overall construction waste	4,200	4,422	+5.3%
Special waste [2]	743	565	-24.1%
Total [3]	**15,102**	**15,332**	**+1.5%**

(1) Year-on-year change is calculated based on the exact amount of solid waste before rounding off.

(2) Special waste includes dewatered sludge, incineration ash and stabilized residue, sewage works screenings, livestock waste, waste tyres, etc.

(3) Figures may not add up to total due to rounding off.

Municipal solid waste disposal

4. In 2016, the quantity of MSW disposal was 10,345 tpd (corresponding to an annual quantity of 3.79 million tonnes), which has increased by 1.8% as compared to 2015 (**Table 1**). The quantity of domestic waste disposal was 6,391 tpd (62% of MSW disposal), which has decreased by 1.1% as compared to 2015. On the other hand, the quantity of commercial and industrial (C&I) waste disposal at landfills was 3,954 tpd, representing an annual increase of 7.0%.

Per-capita disposal rate

5. As shown in **Table 2**, discounting the factor of population growth, the disposal rate of MSW was 1.41 kg/person/day in 2016, as compared to 1.39 in 2015. The increase in MSW disposal rate was mainly due to the increase in C&I waste disposal, which was partly associated with the relatively buoyant local economy in 2016 (see **Annex 1**), and partly due to the weakened demand of international markets for some types of recyclables and tightening of import control of the importing countries (total recovery quantity has dropped by 5.9%) (**Table 4**).

6. The disposal rate of domestic waste was 0.87 kg/person/day, as compared to 0.89 in 2015. The relatively stable domestic waste disposal rate in recent years implies that the growth in domestic waste disposal has broadly been in line with the growth in population.

Table 2: Per-capita disposal rate

Waste category	Per-capita disposal rate (kg/person/day)				
	2012	**2013**	**2014**	**2015**	**2016**
MSW	1.30	1.33	1.35	1.39	1.41
Domestic waste	0.88	0.89	0.89	0.89	0.87
C&I waste	0.42	0.44	0.47	0.51	0.54

Disposal by waste type

7. **Table 3** shows the disposal quantities by waste types. Food waste is the major component of MSW in Hong Kong, which amounted to 35% of the total MSW quantity in 2016. A total of 3,600 tpd of municipal food waste (corresponding to an annual quantity of 1.32 million tonnes) was landfilled in 2016, which has increased by 6.5% as compared to 2015. Domestic food waste disposal decreased by 2.9% in 2016 as compared to 2015, showing that households are gradually becoming more aware of food waste reduction.

Table 3: Quantity of MSW disposal (by type)

Waste type	Disposal quantity (tpd)				
	2012	**2013**	**2014**	**2015**	**2016**
Paper	1,905 (-1.4%)	1,823 (-4.3%)	1,922 (5.4%)	2,257 (17.5%)	2,244 (-0.6%)
Plastics	1,826 (7.8%)	1,866 (2.2%)	2,015 (8.0%)	2,183 (8.3%)	2,132 (-2.3%)
Ferrous Metals	190 (32.6%)	144 (-24.3%)	155 (7.5%)	167 (7.6%)	181 (8.4%)
Non-Ferrous Metals	48 (25.2%)	33 (-31.3%)	54 (63.9%)	69 (27.5%)	61 (-12.3%)
Glass	289 (4.2%)	353 (22.2%)	285 (-19.3%)	367 (28.8%)	329 (-10.4%)
Textiles	293 (34.7%)	270 (-7.7%)	293 (8.3%)	306 (4.4%)	343 (12.3%)
Wood	349 (20.9%)	368 (5.6%)	318 (-13.7%)	356 (11.9%)	277 (-22.1%)
Food Waste	3,337 (-6.9%)	3,648 (9.3%)	3,640 (-0.2%)	3,382 (-7.1%)	3,600 (6.5%)
Electrical and Electronic Equipment	38 (59.8%)	42 (10.4%)	41 (-3.5%)	44 (7.7%)	52 (19.9%)
Others (1)	1,003 (25.8%)	998 (-0.5%)	1,058 (6.0%)	1,027 (-2.9%)	1,126 (9.6%)
Total (2)	**9,278** (3.1%)	**9,547** (2.9%)	**9,782** (2.5%)	**10,159** (3.9%)	**10,345** (1.8%)

(1) Others include bulky items directly disposed of at landfills and other miscellaneous waste materials.
(2) Figures may not add up to total due to rounding off.
(3) Figures in brackets are year-on-year percentage changes.

8. On the other hand, C&I food waste disposal has increased by 29.3% in 2016. This implied that more efforts are needed to continue promoting food waste avoidance, reduction and recycling in C&I sectors.

9. Following food waste, waste paper and waste plastics are the second and third largest constituents of MSW, taking up 22% and 21% of MSW in 2016 respectively. Their disposal quantities both decreased as compared to 2015 (with annual decreases of 0.6% and 2.3% respectively).

RESOURCE RECOVERY

10. The quantity of MSW recovered in 2016 was 1.91 million tonnes, which has decreased by 5.9% as compared to 2015. Most of the recovered materials (97%) were exported to the Mainland and other countries for recycling, with a total export value of recyclable materials of $4.0 billion.

Resource recovery by type

11. **Table 4** shows the quantities of individual types of recovered recyclables from MSW in the past 5 years. As metal recyclables are highly reusable and relatively valuable in international markets, there are strong economic incentives for the industry to recover metal waste. In 2016, 880 thousand tonnes of metal recyclables were recovered for recycling, accounting for 46% of total recyclables recovered from MSW.

12. The quantity of plastic recyclables recovered from MSW increased by 34% to 126 thousand tonnes in 2016. On the other hand, paper recyclables' recovery quantity continued to trend downwards in recent years and decreased by 10% in 2016 as compared to 2015.

Table 4: Quantity of recyclables recovered from MSW (by type)

Recyclable type	Recovered quantity (Thousand tonnes)				
	2012	**2013**	**2014**	**2015**	**2016**
Paper	1,162 (-9.1%)	1,035 (-11.0%)	948 (-8.4%)	896 (-5.4%)	806 (-10.1%)
Plastics	317 (-62.5%)	243 (-23.3%)	99 (-59.4%)	94 (-4.9%)	126 (34.2%)
Ferrous Metals (1)	500 (-25.1%)	523 (4.7%)	845 (61.6%)	864 (2.2%)	808 (-6.4%)
Non-Ferrous Metals (1)	78 (-32.1%)	79 (0.6%)	76 (-3.9%)	84 (11.7%)	72 (-15.1%)
Glass (2)	18 (283.7%)	10 (-44.4%)	8 (-17.2%)	9 (10.2%)	9 (0.4%)
Textiles	4 (-64.8%)	7 (88.5%)	4 (-41.1%)	5 (12.9%)	4 (-11.5%)
Wood	9 (-49.1%)	6 (-32.2%)	6 (3.2%)	1 (-80.6%)	4 (221.8%)
Food Waste	7 (1092.5%)	29 (326.9%)	7 (-75.7%)	14 (101.2%)	16 (11.4%)
Electrical and Electronic Equipment (3)	56 (-16.0%)	56 (-0.4%)	56 (-0.5%)	59 (5.5%)	55 (-5.3%)
Rubber tyres (4)	12 (-19.2%)	22 (80.8%)	5 (-78.7%)	7 (47.4%)	13 (84.8%)
Total (5)	**2,163** (-28.4%)	**2,009** (-7.1%)	**2,053** (2.2%)	**2,033** (-1.0%)	**1,912** (-5.9%)

(1) Those originated from construction and renovation activities were excluded.

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

(3) The volume of waste electrical and electronic equipment recovered for recycling is compiled from results of a biennial survey on "Generation & Disposal Practice of Used/ End-of-Life Electrical & Electronic Equipment and Batteries in Hong Kong" commissioned by EPD.

(4) Quantity includes reuse, retreading and recycling of vehicle tyres and local retreading of aircraft tyres. Waste tyres disposed of at landfills are categorised under disposal of special waste, as waste tyres are shredded or cut prior to disposal at landfills.

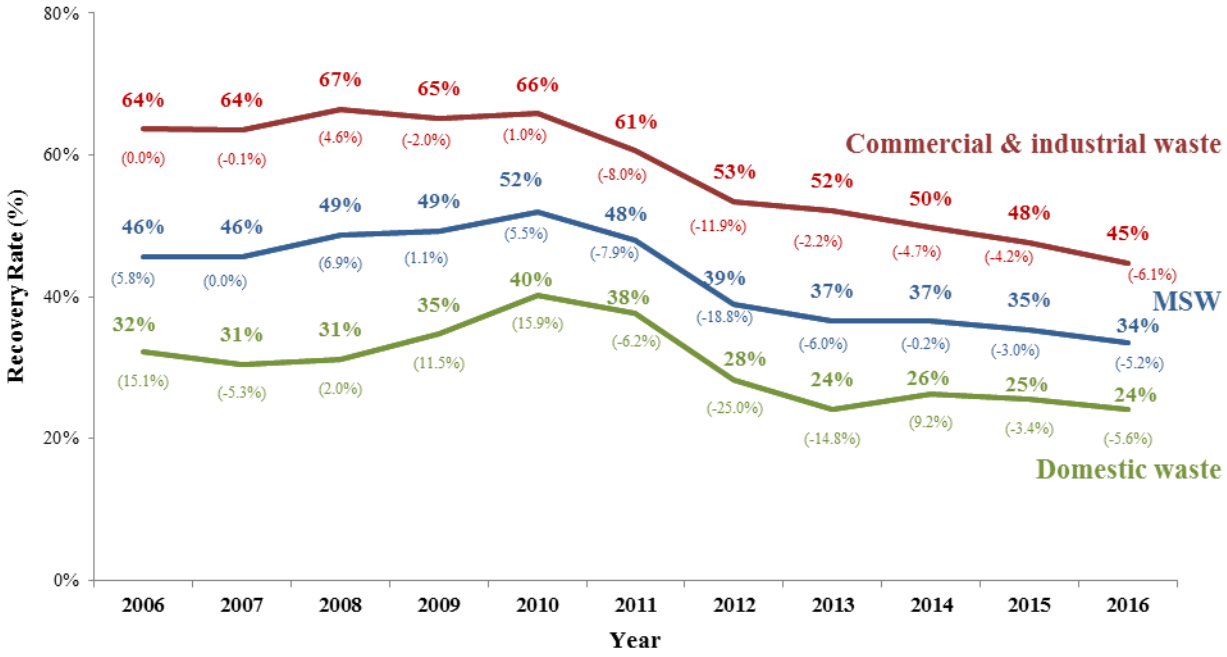
(5) Figures may not add up to total due to rounding off.

(6) Figures in brackets are year-on-year percentage changes.

MSW recovery rate

13. In 2016, the overall MSW recovery rate was 34%, which decreased from 35% in 2015. The domestic waste recovery rate was 24%, while that of C&I waste was 45%. **Chart 1** shows the trends of MSW, domestic and C&I recovery rates in recent years. It can be seen that the recovery rates has been on a slightly downward trend since 2012. The challenging conditions of international commodity markets that lasted for years have had a dampening effect on the demand for and thus prices of local recyclables.

Chart 1: Recovery rate by waste category, 2006-2016



Note: Figures in brackets are year-on-year percentage changes.

MSW GENERATION

14. In sum, the quantity of MSW generation in 2016 was 5.7 million tonnes, which had dropped by 0.7% as compared to 2015 (**Table 5**).

Table 5: Quantity of MSW generation (by type)

Waste category	Generation quantity (million tonnes)				
	2012	2013	2014	2015	2016
MSW	5.56 (-11.8%)	5.49 (-1.2%)	5.62 (+2.4%)	5.74 (+2.1%)	5.70 (-0.7%)

(1) The generation quantity of MSW is the sum of disposal and recovery quantities, the latter being the tonnage of waste materials diverted from landfills through a resource recovery processor. Wastes that do not go to landfills or through a resource recovery processor are considered to be avoided because they have not entered the waste management system. This figure is indicative and for reference only as the recovery quantity of the MSW cannot encompass all recycling activities.

(2) Figures may not add up to total due to rounding off.

(3) Figures in brackets are year-on-year percentage changes.

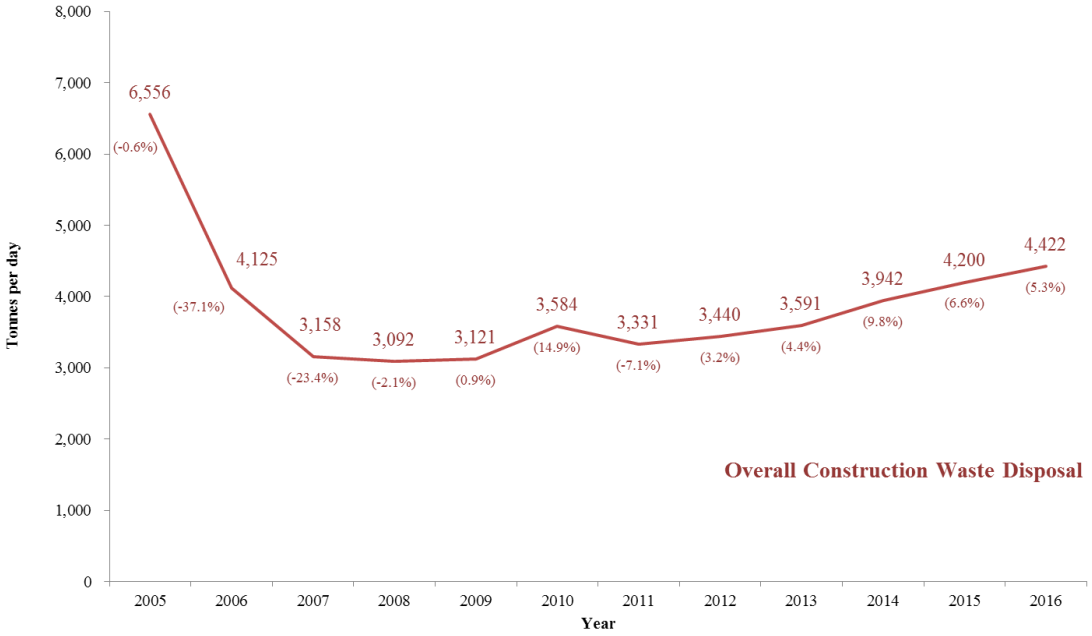
CONSTRUCTION WASTE

15. In 2016, the quantity of overall construction waste landfilled was 4,422 tpd (corresponding to an annual quantity of 1.62 million tonnes), which has increased by 5.3% as compared to 2015 (**Chart 2**). The increase in overall construction waste disposal in recent years was in line with the increase in construction work activities in

Hong Kong (see **Annex 2**).

16. Most inert construction materials in the construction waste generated was delivered to the public fill reception facilities and other outlets for direct reuse. The reuse rate has remained at above 90% in recent years and reached 93% in 2016.

Chart 2: Disposal of overall construction waste, 2005-2016



Note: Figures in brackets are year-on-year percentage changes.

SPECIAL WASTE

17. In 2016, the quantity of special waste disposed of at landfills was 565 tpd (corresponding to an annual quantity of 0.21 million tonnes), which has decreased markedly by 24% as compared to 2015. After the commissioning of the Sludge Treatment Facility (T•PARK) in Tuen Mun in April 2015, dewatered sewage sludge disposal has dropped remarkably. On average, 1,144 tonnes of dewatered sewage sludge per day was treated at the T•PARK in 2016, leading to a drop in disposal quantity by 78% as compared to 2015.

18. For more detailed statistics, Members can refer to the publication "Monitoring of Solid Waste in Hong Kong: Waste Statistics for 2016", available on: https://www.wastereduction.gov.hk/en/assistancewizard/waste_red_sat.htm.

Environmental Protection Department
April 2018

Annex 1: Economic growth and population increase in Hong Kong (2012 – 2016)

Growth rate (%)	2012	2013	2014	2015	2016
Economic growth[(a)]	+1.7%	+3.1%	+2.8%	+2.4%	+2.0%
Population increase[(b)]	+1.1%	+0.4%	+0.7%	+0.9%	+0.6%

(a) Based on the GDP growth in real terms updated by C&SD in August 2017.

(b) Based on the mid-year population growth rates updated by C&SD in August 2017.

Annex 2: Growth of construction work in Hong Kong (2012 – 2016)

Growth rate (%)	2012	2013	2014	2015	2016
Growth of construction work[(c)]	+8.3%	+4.2%	+13.0%	+5.4%	+5.1%

(c) Based on the total construction work value in Hong Kong in real terms published by C&SD.