For discussion on
11 April 2017

Panel on Environmental Affairs
Subcommittee on Refuse Collection and Resource Recovery

Refuse Collection System in Hong Kong

Purpose

In response to Members' earlier requests, this paper provides information on-

(a) the refuse collection system in Hong Kong;
(b) waste reduction and recycling under the refuse collection system;
(c) collection and recovery of waste (in particular food waste) at public housing estates; and
(d) possible changes to refuse collection points ("RCPs") and the recycling bins in public places to tie in with the implementation of municipal solid waste ("MSW") charging in future.

It also set out our responses to comments and suggestions pertaining to the above issues raised by deputations at the last meeting of the Subcommittee held on 16 January 2017.

Refuse Collection System in Hong Kong

2. Hong Kong is a city characterised by a very high population density which in many districts is much higher than that of other international cities. The unique characteristics of our city have led to the development of a complex refuse collection system which aims to maximize the efficiency of our municipal services in order to ensure environmental hygiene.

Overview

3. At present, waste collection services are provided by both the Food and Environmental Hygiene Department ("FEHD") and private

waste collectors ("PWCs"). FEHD's services cover mainly residential buildings. In addition, FEHD also collects waste generated from government venues. In larger residential developments (including public housing estates) and other government venues where proper refuse storage chambers are provided, FEHD will provide direct collection service so long as there are access roads for refuse collection vehicles ("RCVs") to reach these refuse storage chambers. An RCV will attend to a number of designated collection points according to the schedule. The RCV will then transport the waste to a designated refuse transfer station ("RTS") or landfill for disposal. However, in some instances, such as when the refuse storage chambers of a residential building is inaccessible by FEHD's RCVs, the owners or the property management company ("PMC") of the residential building may hire a PWC to collect the household waste generated from households and deliver it to the nearby RCPs manually by means of handcarts. Besides, PMCs of other residential developments and commercial and industrial ("C&I") establishments would also hire PWCs to collect and deliver their waste to RTSs or landfills by RCVs direct.

4. In addition, FEHD provides a network of RCPs in Hong Kong. As at 2016, there are some 170 off-street RCPs, 800 village-type RCPs and 1 900 bin sites (adding to a total of some 2 900). RCPs are of different designs and sizes to meet actual needs and site constraints. They provide temporary storage for household waste deposited by the public and street litter collected by street sweepers. Waste stored in RCPs will be collected by RCVs at least once every day and delivered to RTSs or landfills for disposal.

FEHD's RCV Operations

5. FEHD's in-house and contracted refuse collection fleets provide daily collection service to some 4 000 collection points, including RCPs and refuse storage chambers. In terms of tonnage of waste collected, about 70% of such waste is collected by the RCVs of the waste collection contractors of FEHD. The remainder is collected by departmental RCVs. Some collection points with a high waste yield will be visited by RCVs two or three times a day.

6. Collection is arranged on a district basis. For the outsourced collection service, FEHD's contractor has to provide RCVs and devise routes to carry out the collection service to all the collection points as designated in the contract. The schedule of the collection routes has to be approved by FEHD to ensure smooth and effective operation.

Working under a tight collection schedule, an RCV arrives at the pre-determined collection points to collect the refuse stored at the collection points. Waste collection bins which are loaded with refuse are moved by the RCV loaders to the rear part of the RCV and the waste in the bins will be loaded onto the RCV hopper by means of a bin-lifting device. The loading operation will repeat until all the bins are emptied.

FEHD's RCP Operations

7. In general, the off-street RCPs[1] have sufficient space to accommodate RCVs inside the premises for waste collection operation. Some large RCPs can accommodate refuse compactor which will be stationed at RCPs to receive and compact refuse until they are full. Then, refuse compactors will be carried by hook lift lorries to RTS or landfill for disposal of waste. Apart from waste collection, off-street RCPs also provide some ancillary facilities for other public cleansing services, such as water filling points for the street washing vehicles, roll call points for the street cleansing staff, and logistic support like changing and shower facilities, store rooms, offices, etc.

8. In view of the large amount of waste to be handled, one non-skilled RCP attendant is deployed for each shift in most of these off-street RCPs to maintain the orderly disposal of waste delivered by the public and PWCs, assist the RCV loaders to load the waste onto the RCVs, refuse indiscriminate disposal of dangerous waste and construction waste at RCPs, and to maintain the RCPs in a clean, hygienic and safe state of operation.

9. In response to comments raised by members at the meeting of 16 January 2017, we would like to point out that –

(a) waste collected through RCP operation may contain certain household hazardous waste, such as disposable light petroleum gas ("LPG") cylinders for portable cassette cookers. These cylinders are normally used and emptied cylinders and are mostly wrapped together with other refuse inside garbage bags, which are handled as normal refuse. However, if a RCP attendant notices that there are gas cylinders with gas inside or other types of gas cylinders, e.g. LPG cylinders and fire extinguishers, he/she will reject the

[1] About 170 in number. Owing to the land allocation status, only 157 off-street RCPs are permanent facilities.

collection of such dangerous waste. FEHD has issued guidelines on the handling of abandoned gas cylinders. Staff concerned will inform the concerned gas distributors or relevant departments to follow up as appropriate;

(b) section 11 of the Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK) does not allow people to rake, pick over or grub in any waste deposited in any place, or remove or scatter any waste so deposited. However, if FEHD approves any person or designated organisations to carry out resource recovery activities, including waste separation and selection, in RCPs, such activities would not contravene the legislation; and

(c) section 22 of Cap. 132BK regulates that occupier of any premises may deliver trade waste not exceeding 100 litres in quantity at RCPs. There were concerns on the enforcement situation of this limit. In actual operation, we observe that shops/premises of small-sized business normally do not generate a large amount of trade waste, and would hire private collectors who will collect trade waste from clusters of premises and deliver them to nearby RCPs manually by means of handcarts. The amount of trade waste delivered to RCPs each time from individual premises is normally less than 100 litres and abusive use of RCPs for disposal of large volume of trade waste is not serious.

10. For village-type RCPs which are smaller in size, they are usually situated at roadside or in an open space in sub-urban/rural areas to facilitate villagers in the vicinity to dispose of their household waste. RCVs will park in front/at side of the RCPs for loading of waste. As regards the bin sites, they have no building structures and are located mostly in sub-urban/rural areas. A few wheeled waste collection bins ("WCBs"), with a capacity of either 240-litre or 660-litre, will be placed at the bin sites for the convenience of villagers in the vicinity. If bin sites are inaccessible by RCVs, street sweepers concerned will manually deliver the WCBs to the nearest village-type RCPs/bin sites which are accessible by RCVs pending collection.

Waste Reduction and Recycling under the Refuse Collection System

Measures to Promote Source Separation of Waste ("SSW"), Reduction and Recycling

11. The Government considers that it is most effective and efficient to perform waste reduction and recycling **at source** and will continue to lend support through various initiatives. Through the SSW Programme launched in 2005, recycling bins ("RBs") are provided free-of-charge by the Environment Campaign Committee ("ECC") to the participating residential estates upon request. Technical support from EPD will also be given to PMCs in terms of providing publicity and promotion posters, videos, banners, separation bin labels, and offering promotion game booths, talks and workshops. Since September 2008, the SSW programme has been extended to cover C&I buildings. All public rental housing ("PRH") estates of the Hong Kong Housing Authority ("HA") have joined the programme. There are RBs in every domestic block, commercial centre and market in these estates. The programme now covers over 80% of Hong Kong's population. In response to the requirements and needs of the residential and C&I buildings, we will work with ECC to provide more RBs to each building to facilitate their recycling work. In addition, EPD has also established a Community Recycling Network over the years to cater for the need of residents living in buildings not provided with RBs or other waste separation facilities. Besides, a network of Community Green Stations is being developed in each of the 18 districts. EPD and FEHD will continue to collaborate closely. A recent example is the Lunar New Year Fairs. Details have been set out in the Annex.

12. We have to continuously promote public awareness of the importance of separation and reduction of waste at source. In PRH estates, HA has been collaborating with green groups in various community-based activities for such promotion. Such efforts to promote waste reduction include, for example, the scheme to collect citrus plants after the Chinese New Year for replanting. In 2016, about 7 000 potted plants have been collected. With specific reference to food waste, HA will continue to promote tenants' awareness of the problem and to promote reduction at source. As for food waste separation, in line with the Government's priorities HA has started a scheme focusing on commercial tenants, under which HA partners with green groups to raise the awareness of its commercial tenants on the types and quantity of food waste that they have produced, to promote separation of food waste and non-food waste and to suggest ways for their achieving waste reduction.

The scheme is being implemented at HA's five shopping centres and markets.

13. Meanwhile, RBs are being provided in public places to provide recycling support to buildings which have space constraints in placing such facilities (e.g. single block buildings), and to promote public awareness of waste separation and recycling. These include the RBs provided by the FEHD on pedestrian walkways and by the Leisure and Cultural Services Department ("LCSD") at its cultural and recreational venues. At present, FEHD's contractors are providing collection services to some 2 000 sets of such RBs. Based on the actual needs of different locations, recyclables in these RBs are collected at various frequencies from once weekly to once daily. All recyclables collected will be delivered to the designated recycler on the same day for further processing. FEHD has a stringent contract management system in place to ensure that the recyclables collected are properly processed. On the other hand, LCSD's cleansing services contractor is required to transfer the collected recyclables from RBs in LCSD's venues at a frequency of not less than once weekly or as directed by LCSD to the recyclables collectors or recyclers approved by LCSD and EPD.

14. Apart from RBs in public places, the Government also implemented measures to provide more convenient waste separation facilities in new domestic buildings to facilitate residents' participation in source separation of waste for material recovery. To this end, all new domestic buildings and the domestic part of new composite buildings have been required to provide a refuse storage and material recovery room of at least 1.5 metres x 1.5 metres on every floor following the amendment of the Building (Refuse Storage and Material Recovery Chambers and Refuse Chutes) Regulations in 2008. As at September 2016, over 200 new housing developments have been equipped with the required refuse storage and material recovery rooms, serving some 52 000 flat units and 160 000 residents.

Preparation for the Implementation of MSW Charging

15. Following an extensive public engagement exercise, the Council for Sustainable Development recommended to the Government an implementation framework for MSW charging in December 2014, which was later accepted by the Government. Amongst other things, it recommended that the charging mechanism should be built upon and broadly compatible with the prevailing effective waste

collection/handling systems to ensure environmental hygiene. In preparing for the future implementation of MSW charging, the following changes are being planned for the RCPs and RBs in the public places.

Improvements to the RCPs

16. To facilitate enforcement and enhance recycling support at suitable RCPs in order to complement the implementation of MSW charging, we would conduct improvement and upgrading measures in RCPs, including improving the lighting system to facilitate the checking of designated bags, providing more RBs near or inside RCPs as appropriate to enhance recycling, and provision of notice boards which provide information on waste reduction, recycling and nearby recycling facilities, etc.

17. At the last meeting of the Subcommittee held on 16 January 2017, some deputations suggested that existing RCPs may be converted to also play a resource recovery function, such as providing space/facilities for in-situ preliminary recycling and temporary storage of resources recovered. We have given due consideration to the proposal yet in the light of the time and space constraints in RCV and RCP operations mentioned above, it will be operationally challenging for waste sorting and recycling activities to be carried out throughout the short-lived refuse collection operation. In addition, the majority of the existing RCPs are single-storeyed buildings with limited space and they are generally heavily loaded due to gradual increase in population (and hence the amount of refuse to be collected). The scope for viable options for upgrading these facilities to meet the requirements under the proposal will be limited[2]. However, the Government remains open to this proposal, on the premise that the current effective and efficient refuse collection service (particularly at the RCPs) is not affected. This could be further explored in planning for future RCPs.

18. On a related note, on public health ground, FEHD does not agree to undertaking resource recovery by unwrapping and picking from the properly wrapped bags of refuse or allow RCP attendants to pick from

[2] For instance, a number of factors have to be taken into consideration on the feasibility of constructing additional floors above the RCPs, such as the structural stability, the mode of transporting the recycled materials to the upper floors, the feasibility of installation of lifts, availability of operation space, and the noise and environmental health problems arising from the operation, etc. Apart from obtaining support from respective District Councils and the local communities on the proposed modification works, identification of suitable sites in the vicinity of RCPs for construction of temporary facilities to provide refuse collection services to the public during the works period are required before the works can be taken forward.

refuse and waste collected in RCPs.

Improvement to the RBs in public places

19. With reference to experiences in other cities, the implementation of waste charging is usually accompanied by a reduction of the number of litter containers ("LCs") to discourage abusive use of the latter to evade MSW charges[3]. The number of RBs was also adjusted to enhance the RB to LC ratio. To this end, a Steering Group on the Modification of Recycling and Refuse Collection Facilities in Public Places ("the Steering Group"), chaired by Secretary for the Environment, was set up in February 2016 to review the number, distribution and design of the RBs and LCs in public places.

20. The Steering Group has recently completed the first stage of its work on the review of number and distribution of the LCs and RBs. Based on a set of planning parameters[4] as identified through a consultancy study, the Steering Group considered that the number of LCs in public places should be gradually reduced by 40% to 24 300 by the time when MSW charging is planned to take effect in 2019. The current RB to LC ratio of 1:14 will be enhanced to 1:6 and the number of RBs in public places will be progressively increased by 45% to 4 000, also by the time when MSW charging is planned to take effect in 2019. FEHD and LCSD will conduct reviews thereafter with a view to further adjusting the number of LCs and RBs in public places, taking into account the situation on the ground, public reaction and other operational considerations

21. In addition, LCs and RBs should be placed at strategic locations (e.g. entrances and exits of venues and crossroads) to provide the public with greater certainty on their placement, thereby encouraging their use. FEHD and LCSD will also consider placing specific RBs dedicated to the reception of specific types of recyclables at suitable locations e.g. specific RBs for recyclable plastic bottles and aluminium cans could be placed outside sports facilities and at beaches. Further guidelines will be drawn up on their placement for reference by the relevant departments.

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[3] There were around 29 000 LCs and 1 500 RBs in Taipei City before the implementation of MSW charging in 2000 and around 7 600 LCs in Seoul in 1995. As of now, there are 2 700 LCs and 2 700 RBs in Taipei City and 4 500 LCs and 4 500 RBs in Seoul. These show that the numbers of LCs in both cities have drastically reduced while the numbers of RBs have increased since the implementation of waste charging.

[4] According to the planning parameters, the provision of RBs should be increased and the distance between RBs is recommended to reduce to 250m. It is also recommended that the provision of LCs should be reduced and the distance between LCs should be increased 150m.

22. Existing RBs in Hong Kong's public places have separate compartments for collecting waste plastics, metals and papers, but we are also aware that mixed RBs are adopted in some other cities. At the last meeting held on 16 January 2017, some deputations have proposed alternative ways to separate waste, for instance a "two-bin" system separating wet/contaminated waste from dry waste/recyclables. In a similar vein, the Steering Group considered earlier the pros and cons of adopting RBs with one single compartment to collect different types of recyclables in Hong Kong.

23. We will explore the feasibility of providing mixed RBs with one single compartment to collect different types of recyclables, which may reduce the demand for space in public places and spare some pedestrians (in particular some tourists who may not be accustomed to separating recyclables at source) the trouble of sorting recyclables at the point of deposit which may help yield an improvement in the overall recovery rate. To this end, a trial run will be conducted alongside an education campaign to promote clean recycling in view of potential contamination of recyclables in a mixed RBs approach.

Advice Sought

24. Members are invited to note the content of this paper and offer comments.

Environmental Protection Department
Food and Environmental Hygiene Department
Housing Department
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Annex

Measures to support Waste Reduction and Recycling at Lunar New Year Fairs ("LNYFs")

The Environmental Protection Department ("EPD") and the Food and Environmental Hygiene Department ("FEHD") have been collaborating closely in promoting the reduction of waste generated from Lunar New Year Fairs ("LNYFs") and facilitate the recovery, reuse and donation of useful resources. Such measures include:

(a) A waste reduction and recycling guideline will be issued by EPD and FEHD to stall operators of LNYFs. Through the guideline, the stall operators are encouraged to use reusable materials for stall construction, to reduce and recycle materials for packaging and logistics, to reduce and handle food waste properly, and to arrange with charitable organisations for donating surplus merchandise. In the LNYFs, FEHD also arranged on-site broadcasting to reinforce the green messages.

(b) This year, EPD hired a contractor to run a territory-wide peach blossom tree recycling programme which included collecting leftover peach blossom trees from the Victoria Park and Fa Hui Park LNYFs and processing/ recycling them into useful materials (e.g. mulch and compost for landscaping purpose).

(c) Since 2013, EPD and FEHD have implemented a trial scheme to collect waste wood (including waste wooden pallets or furniture) from certain LNYF sites.

(d) From 22 to 28 January 2017, the Conservancy Association ("CA") was engaged by the Environmental Campaign Committee, with support from EPD and FEHD, to hold the first "Green LNYF" at the Cheung Sha Wan Playground. During the fair period, CA set up a promotional booth for spreading green tips to the public and collecting unsold dry goods from stall operators after the fair. Over 90% of the stall operators signed a Green Pledge to show their commitment to follow the "use less, waste less" principle and practise waste reduction and recycling. Waste materials generated by fair stalls (including marquees, sand bags, decorative materials, polyfoam boxes, wooden pallets and bamboo poles) were properly sorted on-site

for recycling, reuse or donation. To this end, EPD and FEHD will jointly review the outcome and effectiveness of this pilot "Green LNYF" and consider the feasibility of extending the activities to other LNYFs next year, which FEHD would support subject to resources availability.

2. In addition, in response to the views raised by deputations at the last meeting on 16 January 2017, operators of all four operating Community Green Stations ("CGSs"), namely Sha Tin, Eastern, Kwun Tong and Yuen Long, have coordinated with the respective groups of volunteers ("volunteer groups") and opened their sites on Lunar New Year's Day this year for temporary storage of materials recovered by the volunteer groups. With the coordination by the volunteers groups, all materials have been transferred to people in need or collected by visiting public shortly after. Based on this years' experience, we will review and explore future collaboration opportunity with a view to enhancing the CGSs' service on the premise that core operation of the CGSs is not affected.

3. Separately, FEHD specified in its current agreement with a stall licensee of LNYF requiring the licensee to maintain the stall area and its surroundings clean and tidy; to provide sufficient number and appropriate dustbins with close-fitting lids for collection of refuse; and upon the closing of LNYF to completely remove the stall structure and all paraphernalia, together with all refuse, debris and unsold commodities (whether damaged or otherwise), from the stall area. During the LNYF period, FEHD's recyclables collection services contractor ("the Contractor") arrived at each LNYF site daily for collection of the recyclables including waste paper, metal and plastic materials.

4. In the course of site clearance operations on the LNY's Day this year, staff of FEHD and its cleansing services contractors first sorted and separated the recyclables, namely waste paper (including paper boxes, decorations, etc.), metal (including marquees, stall racks, etc.) and plastic materials (including furniture) from the waste to facilitate collection and delivery by the Contractor to FEHD's approved recyclers for processing. FEHD also gathered unsold potted flowers and plants voluntarily surrendered by the licensees of LNYF stalls for delivery to elderly homes / residential care homes and public hospitals by volunteer teams formed by FEHD staff. To further reduce the waste generated from LNYF sites, FEHD would send the intact plastic or wooden furniture collected from LNYF sites to non-governmental organisations to arrange for reuse or further donation.

5. This year, FEHD collected a total of about 365 tonnes of refuse in total at 15 LNYF sites throughout Hong Kong on the LNY's Day. This represents a reduction of about 82 tonnes as compared with last year. The effective waste reduction was a result of cooperation of all parties involved, enhanced publicity and active participation on reduction at source.

6. The two departments will continue to cooperate and implement appropriate measures to promote waste reduction, recovery and recycling in the LNYFs next year.