For Information

Panel on Environmental Affairs
Subcommittee on Refuse Collection and Resource Recovery

Following Members' requests at the last meeting of 11 April 2017, this paper provides up-to-date information on –

(a) the technologies for waste separation and resource recovery in Hong Kong;
(b) the work of the Steering Group on the Modification of Recycling and Refuse Collection Facilities in Public Places ("the Steering Group"); and
(c) the management of yard waste.

Technologies for waste separation and resource recovery adopted in Hong Kong

2. Recyclables collected through various means will be transported to recyclers for further processing (which may comprise sorting, dismantling, washing, baling and crushing) for resource recovery, or to the Chemical Waste Treatment Centre for treatment and disposal[1]. The processing activities involved vary, depending on the scale of operation of the recyclers, the size of individual recycling sites, and the types of processing equipment installed, etc. The value of recyclables in turn depends on the degree to which the recyclables have been processed, the market demand for certain recyclables, and the market conditions in general.

3. During the recycling processes, the recyclables will firstly be sorted to remove impurities. Most of the local recyclers sort recyclables manually. Further processes (e.g. dismantling or crushing) are less commonly required for recyclables with readily available market outlets such as paper and metals. However, recyclables with a lower value such as waste plastics may need to undergo further value-adding processes, which may also be required for compliance with the relevant controls over imported wastes and recyclables in other recipient jurisdictions. Most local recycling activities take place on open-air sites including

[1] Recyclables which will be further processed at the Chemical Waste Treatment Centre include fluorescent and mercury-containing lamps.

public cargo working areas, short term tenancy sites on Government land and berthing areas. In Hong Kong, the vast majority of processed recyclables are exported to the Mainland and other economies/cities for further processing into recycled products, while only a very small portion is recycled into products locally such as biodiesel and wood fuel.

4. Separating the different elements found in waste streams is essential for recovery of useful materials and minimizing the amount of residual waste that goes to landfills. While selected new technologies for sorting and separating materials and recyclables from the waste streams (including drum screens/separators[2], eddy current separator[3] and X-ray/infrared technology[4]) may be adopted in some places outside Hong Kong, manual sorting of waste remains the most common means around the world at present. In fact, the application of these new/sophisticated technologies is limited as far as the local recycling businesses (mostly small to medium in scale) are concerned, owing to the sophisticated installations and heavy investments involved, and the large-site requirement, etc.

5. As regards the various measures to promote waste reduction, separation, collection and recycling in Hong Kong, please refer to LC Paper No. CB(1)787/16-17(01). Among other things, we have provided the land lots in the EcoPark to private recyclers at affordable rent with a view to encouraging investment in advanced technologies and value-added recycling processes. For example, one of the EcoPark's tenants recycles waste cooking oil and treated grease trap waste into biodiesel and industrial-type free fatty acid through the processes of raw material extraction, neutralisation, separation and distillation.

Steering Group on the Modification of Recycling and Refuse Collection Facilities in Public Places

6. To complement the introduction of municipal solid waste

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[2] The screens are designed to separate materials according to different size of the particles. Waste is fed into a large rotating drum which is perforated with holes of a certain size. Materials smaller than the diameter of the holes will be able to drop through, but larger particles will remain in the drum.

[3] This method is used in the separation of metals. An "eddy current" occurs when a conductor is exposed to a changing magnetic field for dividing ferrous and non-ferrous metals.

[4] X-ray/infrared can be used to distinguish the different types of waste materials based on their reflected light and density.

("MSW") charging, the Steering Group, chaired by the Secretary for the Environment, was set up in February 2016 to review the number, distribution and design of recycling and refuse collection facilities in public places.

7. A first stage consultancy study was commissioned in April 2016 to review the number, distribution and improvements that should be made to the recycling bins ("RBs"), litter containers ("LCs") and refuse collection points ("RCPs") in public places. To undertake the study, the consultant has conducted field visits and questionnaire survey to assess the utilisation of recycling facilities and LCs in different settings, and conducted focus group meetings to gather feedback from the public and stakeholders.

8. Based on a set of planning parameters as identified through the 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 at 1:14 should be enhanced to 1:6 and the number of RBs in public places should be progressively increased by 45% to 4 000, also by the time when MSW charging is planned to take effect in 2019. The Food and Environmental Hygiene Department ("FEHD") and Leisure and Cultural Services Department ("LCSD") will review the position 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.

9. 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 the pattern of their geographical 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.

10. For RCPs, the Steering Group considered that to facilitate

enforcement and enhance recycling support at suitable RCPs to complement the implementation of MSW charging, improvements to the RCPs will be made, including improving the lighting system to facilitate checking of designated bags, providing more and larger RBs near RCPs especially those near the old districts and in rural areas to enhance recycling, and provision of notice boards which provide information on waste reduction, recycling and nearby recycling facilities, etc.

11. Following the completion of the first stage consultancy study, the Steering Group will commission a second stage consultancy study in the latter half of 2017 to recommend new designs for LCs and RBs in public places, including larger RBs for placing near RCPs, information boards and signage for placing at RCPs. Public engagement will be conducted during the study.

Management of Yard Waste

12. According to *A Food Waste & Yard Waste Plan for Hong Kong 2014-2022* ("the Food Waste Plan") published by the Environment Bureau in February 2014, yard waste (around 46 000 tonnes) takes up 1.5% of total waste disposed of at landfills each year. In 2014, the Development Bureau issued the "Guidelines on Yard Waste Reduction and Treatment" for use and reference by Government departments on implementation of yard waste reduction and treatment at various stages from planting design to maintenance. Amongst others, LCSD and the Agriculture, Fisheries and Conservation Department ("AFCD") have been promoting yard waste reduction and recycling in venues under their purviews following these guidelines.

<u>LCSD</u>

13. In venues managed by LCSD, it is estimated that a total of 3 600 tonnes of yard waste are generated annually. Since 2014, LCSD has implemented a pilot scheme to install on-site composting facilities at 49 venues. In 2015, 147 tonnes of yard waste (4% of the total yard waste produced) were recycled at 49 venues, including around six tonnes through on-site composting while the remaining 140 tonnes were delivered for treatment at Kowloon Bay Waste Recycling Centre and Animal Waste Composting Plant. LCSD will step up its efforts in yard waste management and recycling by reduction at source to gradually

replace the planting of annuals by shrubs or perennials with colourful foliage, and enhancing on-site composting by installing at least one composter at each of the community gardens, sports and recreation grounds, holiday camps, nurseries, as well as parks, playgrounds and gardens with a planting area of 3 000m^2 or above subject to detailed feasibility studies. This involves 150 additional venues, a threefold increase from the 49 venues under the pilot scheme. By end of April 2017, 87 additional venues have been installed with garden composters. Moreover, LCSD will reuse mulching material produced from wood waste at its venues.

AFCD

14. In 2016, the AFCD collected about 72 tonnes of yard waste from vegetation maintenance works in country parks and crop production in the Tai Lung Experimental Station. About 40 tonnes of infested yard waste were disposed of at landfills. AFCD has recycled most of the yard waste inside country parks by stockpiling the yard waste in nearby habitats for natural decomposition. Suitable tree logs have been re-used to make furniture or recreation facilities in country parks. Yard waste generated from crop production were converted into compost and re-used on site. AFCD will continue to adopt the existing practice to maximise in-situ re-use / recycling of yard waste.

For Information

15. Members are invited to note the content of this paper.

Environmental Protection Department
June 2017