

Refuse collection and resource Recovery

Hong Kong Green Strategy Alliance (HKGSA) is a non-profit making organization founded in 2012 by a group of professionals and stakeholders who are visionary and wish to undertake the responsibility on the issues of environmental protection and sustainable development. Through active participation, discussions and exchange of views in green issues, projects and technologies etc., HKGSA would offer our professional opinions and solutions to tackle green issues in Hong Kong and neighboring region.

In any developed society, waste increases as population grows, Hong Kong has no exception. The Environmental Protection Department has been promoting waste reduction and recovery for many years as it is the most important aspect of environmental protection.

However, three strategic landfills would start to approach their capacity one by one in the early to mid-2018. Therefore, there is an urge for the adoption of sustainable technologies to reduce the volume of waste and recover resources so as to deal with the municipal solid waste generated in Hong Kong more effectively.

In general, the waste collection arrangement in Hong Kong is complex, the domestic waste produced at households is collected by cleansing workers and taken to public/private refuse collection points. The Food and Environmental Hygiene Department then transfers the waste collected from domestic sector and street level to refuse transfer stations for final disposal at landfills. The waste produced by commercial and industrial sectors is handled primarily by private waste collectors.

The exact collection routes depend on the waste arising locations and the provision of local waste collectors. Alternative routes are not uncommon. For instance, people living in rural areas may bring their domestic waste to nearby public refuse collection points directly without the involvement of private waste collectors.

In order to have effective waste collection, there are a number of considerations need to pay special attention:

- a) Although the environmental awareness of the general public has increased significantly in recent years, their willingness to actively participate in waste reduction still needs to be enhanced.
- b) The promotion of waste avoidance purely on environmental grounds might not be sufficient. Waste charging is a key policy tool in waste avoidance and minimization. By putting a price on generating waste, we can induce change in people's waste habits and behavior.
- c) To facilitate the collection and recovery of recyclable materials that have marginal recycling values, the adoption of producer responsibility schemes will enhance their recovery and help sustain the local recycling industry.

- d) The built environment inhibits recycling activities from the domestic waste stream. Small flat sizes and communal utility areas restrict source separation and storage practices.
- e) Low values, high transportation cost or lack of market demand for recovered materials particularly for glass, wood, tires and organic materials.
- f) The predominance of small and medium recovery and recycling enterprises discourages investments in waste recovery technologies.
- g) High land premium and labor cost affect the economic viability of setting up local recycling facilities.

According to the Waste Statistics for 2015 issued by the Environmental Protection Department (EPD), 10,159 tons of MSW that is thrown away at landfills everyday, some 40% are made up of “putrescible”, which are various types of organic waste that decompose and create odor. Among organic waste in Hong Kong, food waste constitutes the majority of putrescible waste (3,382 tons). Considering the on-site organic recycling - Composting is a biological process using heat and oxygen to break down and transform organic material into a nutrient-rich product. Onsite processing is a viable cost-effective alternative to current waste management practices including landfill and incineration. In-vessel, are enclosed containers that range from small bins to tub grinders to large vertical structures. In most commercial composters, automated systems aerate and rotate the waste during the decomposition process. Processing waste into usable compost extends has several benefits. On the larger, environmental level, it extends landfill life, minimizes greenhouse gas emissions, conserves natural resources and results in an environmentally beneficial end product. As such, composting is one of the ‘full circle’ or ‘zero waste’ waste reduction practices that measurably minimizes environmental impact.

Key element of effective waste recycling

EPD has launched a territory-wide Program on Source Separation of Domestic Waste since January 2005 and the Program on Source Separation of Commercial and Industrial Waste in 2007 respectively. In order to support the program effectively, an innovative refuse collection system should be appointed for high rise building in Hong Kong. Refuse chute

manufacturers have developed an innovative refuse collection system that allows residents to separate the recyclables at the push of a button conveniently located in their respective floor of the estate. Essentially, a waste separation refuse chute technology (WSRCT) is a normal refuse chute equipped with a built-in micro-computer. It sorts and distributes refuse semi-automatically to different containers. The system, which fits in similar space as the chute and container now in use, can segregate glass, plastic, paper, metal, and other rubbish into separate boxes, which is controlled through a micro-computer. The WSRCT is now employed in some High Rise Refuse Collection systems. It has the following advantages over the traditional chute systems:

- 1) It eliminates the cost associated with floor-to-floor recycling collection program.
- 2) It increases recycling rate which reduces trash volume going to the landfills.
- 3) It relieves the workload of cleaners and cleaning contractors from carrying recyclables down the elevator to a drop-off room or leaving them in bins in the trash chute.
- 4) It minimizes the size of chute rooms on each floor.

To encourage public participation in waste separation and recycling, Source Separation of Waste by distributing waste separation bins to residential, commercial and industrial buildings was promoted for last decade. Through the provision of waste separation bins, not only can the waste separation facilities be improved but also the variety of recyclables can be expanded. Besides, property management companies are encouraged to implement waste separation in the premises, so as to increase the recycling rate in long-run.