

## **Waste Recycling Programmes**

### **Introduction**

This note provides supplementary information on the cost-effectiveness of waste recovery and recycling programmes implemented by the Environmental Protection Department (EPD). These programmes can be grouped into the following three general categories.

- Programmes related to domestic waste recovery including source separation of domestic waste and recycling of selected waste types in the domestic waste stream such as plastic bags and packaging waste.
- Programmes related to commercial and industrial waste recovery including the Wastewise Scheme as well as waste reduction and recycling programmes for different trade sectors.
- Pilot programmes related to development of Product Responsibility Schemes (PRS) including programmes for recovery of waste tyres, rechargeable batteries, waste electrical and electronic equipment, and beverage containers.

### **Objectives of the programmes**

2. The primary objectives of the programmes are to promote community participation in waste reduction, enhance waste recovery and recycling, and minimise waste requiring disposal. The programmes are designed to deal with different waste sources and waste types as well as covering the collection, processing and outlets for recyclable materials and end-of-life products. For the pilot programmes related to development of PRS, they are usually conducted on a relatively small scale as the basic intention is to examine the operational logistics and effectiveness of different product recovery and recycling arrangements so as to generate information for planning long term territory-wide PRS programmes.

## **Domestic waste recovery programmes**

3. Since 1998, EPD has been testing various waste recovery systems with a view to identifying the most effective and suitable mode. More than 28,000 three-coloured waste separation bins are now placed at some 9,300 points throughout the territory (including public and private housing estates, schools, public venues and streets). The 3-bins system together with its publicity campaigns has helped to increase public awareness and active participation in waste recovery. The domestic waste recovery rate has increased from around 8% before 2000 to about 14% in 2004 as more waste paper, aluminium cans, plastic bottles, and other recyclables are diverted from the domestic waste stream to the hands of commercial recyclers.

4. However, a key constraint of the 3-bin system as reflected in opinion surveys and from field investigations is that it is not very convenient for residents to practise separation waste at source. More people would prefer the convenience of putting waste paper and other recyclables next to the garbage bin on the floor of their premises for cleansing workers to pick up. When the cleansing workers can get extra income from giving the recyclables to recyclers, they are very willing to collect the recyclables from each floor of a building. This has become a common practice in many housing estates and this has confirmed the importance of floor to floor collection to support source separation of waste.

5. A pilot programme was therefore implemented in 2004 to test out the effectiveness of floor-to-floor source separation of waste at 13 housing estates in the Eastern District of Hong Kong. The results of the pilot programme showed that the overall quantity of recyclables collected from the estates has increased by 23%. Some estates have doubled or more than doubled their recyclable quantities. The pilot programme also showed that while some initial spending is needed for the housing estates to set up floor-to-floor facilities such as waste separation bins, the value of the recyclables collected would generally offset the front-end cost eventually as recyclables are continuously separated by residents at source and sold to the recyclers. Many recyclers are now competing to

collect recyclables from housing estates with a good and sustained supply of recyclables.

6. In parallel to the above pilot programme, other separate programmes were carried out to test out the recovery of more materials such as plastic bags and mooncake containers from the domestic waste stream. These separate programmes confirmed that if residents were willing to participate, plastic bags and mooncake containers could be separated at source for recycling. However, it would not be cost effective to set up separate collection arrangements for plastic bags and metal containers as the running cost would be very high for the relatively small quantity available for collection each time. Instead, they could be collected in a cost effective manner together with waste paper, aluminium cans, plastic bottles and other recyclables through an expanded source separation of waste programme.

### **Territory-wide source separation of waste**

7. With the encouraging results from the pilot source separation of waste programme in the Eastern District and the information gathered from the plastic bags and mooncake containers recycling programmes, it has become clear that a full scale programme to implement source separation of waste in Hong Kong is necessary to further increase the domestic waste recovery rate beyond what can be accomplished by the 3-bins system. A territory-wide programme was therefore launched in January 2005 and a target of recruiting 180 estates to participate in the programme was set for 2005.

8. The programme aims to make it more convenient for residents to separate waste at source by encouraging and assisting property management companies to provide waste separation facilities on each floor of the building. Each participating estate could adopt the best mode of waste separation and recovery tailor-made to suit its particular physical constraints and other characteristics. For example, for buildings with sufficient space, waste separation facilities for different recyclables can be put in place in the refuse room or staircase landing area of each floor. For those with insufficient space, mixed recyclables can be collected in designated containers or areas. Cleansing workers

will then separate the recyclables at central refuse collection points on-site. Estates may also encourage residents to take out recyclables separately on specified days of the week. Recyclables are separated within each estate and sold to recyclers directly.

9. Besides paper, aluminium cans and plastic bottles that are currently collected by the 3-coloured waste separation bins, the types of recyclables recovered are broadened to include many other recyclables like metal cans, mixed metal items, plastic bags, mixed plastic items, toys etc. Estates can continue to run regular collection programmes for specific types of recyclables such as used clothing, electrical and electronic appliances, etc. In order to encourage more housing estates / residential buildings to participate in the Source Separation of Waste Programme, the Environment and Conservation Fund (ECF) permits residents' organizations and property management companies to apply for funding assistance to implement source separation of waste. A sum of \$5 million has recently been allocated by the ECF Committee for this purpose.

### **Commercial waste recycling programmes**

10. Compared with domestic waste, the recovery rate for commercial and industrial waste is much higher (over 50% in 2004) as the recyclables from commercial and industrial sources are less heterogeneous and therefore easier for source separation and recovery. When there is money to be made, both the business operators and recyclers are quick in working with each other to ensure that recyclables are diverted from the waste stream. Hence, the role of EPD in facilitating waste reduction and recycling in the commercial and industrial sector has been primarily in offering information and advice as well as recognition through the Wastewise Scheme.

11. The Wastewise Scheme has been helping Hong Kong businesses in adopting measures to reduce and recycle waste generated within their establishments or generated through the services and products that they provide. Participating companies can get free professional advice on ways to reduce and manage the waste they produce. Wastewise logos are awarded to honour member's achievements on waste reduction and

recycling. Since the scheme was implemented in 1999, over one thousand companies have joined the scheme out of which 365 have received the Wastewise logo. With an annual operating budget of about \$1 million for the advisory service rendered to the business sector, the Wastewise Scheme has proved to be a cost-effective programme to promote waste reduction and recycling in the commercial and industrial sector.

### **Pilot product responsibility programmes**

12. Four pilot programmes have been implemented so far to study the operational requirements to collect and recycle end-of-life vehicle tyres, batteries, electrical and electronic equipment (including computers) and beverage containers. The products were chosen based on the successful experience in overseas countries in running PRS programmes to recycle the products after their use.

13. As mentioned above, the primary objective of the pilot programmes is to study different means of collecting and recycling the end-of-life products and hence the programmes are operated on a relatively small scale to minimise the costs and uncertainties of trying out different collection modes, treatment processes and market outlets.

14. On batteries, the pilot programme on recycling of mobile phone rechargeable batteries which commenced in 2002 was quite successful. The programme was funded by the mobile phone and telecommunication trade. Collection bins for used mobile phone batteries were set up at the shops of the participating companies for the public to return used mobile phone batteries. The programme was expanded in April 2005 to cover all kinds of rechargeable batteries. More companies in the battery and electronic equipment trade participated and contributed funds to set up a large network of collection points in chain stores, shopping centres, MTR stations, housing estates and schools. The programme is a good case of a voluntary PRS operated by the trade in collaboration with the government and green groups.

15. For vehicle tyres, a pilot programme to recycle waste tyres received at the Kowloon Bay Transfer Station (KBTS) was initiated in

2003. The original costs of handling waste tyres at KBTS including collection, shredding and landfilling of the tyres was about \$1,600/tonne. Under the pilot project, the cost for collection and recycling of the tyres was about \$900/tonne. The key problem identified in the pilot project is that secured market outlets for the processed materials must be available in a sustained manner. If this condition is satisfied, a full programme of PRS for waste tyres can be implemented in Hong Kong. Arrangement is now being made by EPD to carry out a further pilot programme to ascertain the market outlet situation for waste tyres recycling.

16. The other pilot programmes on waste electrical and electronic equipment as well as beverage containers are also being proceeded as planned. Information is being compiled on the generation, collection and processing of the waste products. The market outlets and the costs for implementing a full scale PRS programme are being ascertained. In general, a subsidy in the order of about \$2,000/tonne for waste computers and \$4,500/tonne for waste electrical and electronic equipment would likely be required.

Environmental Protection Department  
July 2005