

## **Measures to Promote the Prevention and Recovery of Municipal Solid Waste in Hong Kong**

### **Purpose**

This paper informs Members of the progress of measures that the Government has taken to promote the prevention and recovery of municipal solid waste<sup>1</sup> (MSW) in the past 18 months.

### **Background**

2. At present, over 6 million tonnes of wastes are disposed of in our three landfills each year<sup>2</sup>. About 51% of them are MSW, 43% are construction waste, and 6% are special waste like sludge and animal carcasses<sup>3</sup>. Between 1996 and 2000, the total volume of MSW increased at an annual rate of 3.5%. For domestic waste, the annual increase was over 4%, which is much higher than the average population growth of 0.9%.

3. We have developed three landfills<sup>4</sup> to meet our waste disposal needs. They occupy 270 hectares of land, cost \$6 billion to build and over \$400 million a year to operate. When planned in the 1980s, they were expected to serve our waste disposal need till 2020. However, as the amount of waste requiring disposal has been increasing,

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<sup>1</sup> Municipal solid waste includes domestic, commercial and industrial waste.

<sup>2</sup> The total amount of waste disposed of at landfills in 2002 was over 7 million tonnes. This was mainly due to an abnormal increase in the amount of inert construction waste disposed of at the South East New Territories Landfill after the completion of the reclamation works at Tseung Kwan O had completed in early 2002. The amount of inert construction waste disposed of at landfills has returned to the normal level after Tseung Kwan O Fill Bank was commissioned in October 2002 as the Fill Bank provides a convenient outlet for inert construction waste.

<sup>3</sup> The MSW volume and composition do vary from year to year. The figures here are the average figures from 1998 to 2002.

<sup>4</sup> They are located at Tseung Kwan O, Tuen Mun (Nim Wan) and North District (Ta Kwu Ling).

the landfills have been filling up much faster than planned. By the end of 2002, we only had a remaining landfill capacity of around 110 million tonnes. We project that the existing landfills would only last 8 to 13 years if waste continues to grow at the current trend.

4. Waste prevention and recycling has been our main focus in tackling the waste problem. In our paper ‘Promoting Prevention and Recovery of Domestic Waste (ACE Paper 36/2001), we have set the following targets to facilitate evaluation of the effectiveness of the measures:

- (a) To contain the quantity of municipal solid waste requiring disposal to 3.4 million tonnes in 2004, and 3.7 million tonnes in 2007;
- (b) To raise the overall MSW waste recovery rate from 34% to 36% in 2004 and 40% in 2007; and
- (c) To raise the domestic waste recovery rate from 8% to 14% in 2004 and 20% in 2007.

### **Measures to Promote Waste Prevention and Recovery**

5. The following paragraphs gives an account of the progress of measures that we have taken to promote waste prevention and recovery in the past 18 months –

#### Strengthening Support for Waste Separation and Recovery

6. To facilitate public participation in waste separation and recovery, we have placed over 22,000 waste separation bins at some 8,000 points throughout the territory. They cover parks, sports venues, leisure and cultural facilities, Government buildings, hospitals, clinics, public/private housing estates, schools, refuse collection points and by the roadside.

7. To make it more convenient for public housing residents to participate in waste separation and recovery, Housing Department carried out pilot programmes in 2000 and 2001 to experiment the effects of placing waste separation bins on each floor of public housing blocks. As the result has been very positive, the Department intends to extend this arrangement to more public housing estates incrementally, wherever such is practicable. By March this year, 8 public housing estates covering 26,300 households will be included in this programme.

#### Making Available Land for Waste Recovery Operations

8. Recognizing that land is essential for primary processing of recovered materials, we have set aside 20 hectares of permanent land at Tuen Mun Area 38 for setting up a Recovery Park. We are now examining the detailed arrangements for establishing the Recovery Park and would commence the environmental impact assessment in the coming months.

9. Separately, we have been providing land throughout the territory on short-term tenancies for exclusive use by the recycling industry. At present, 24 sites with a total area of about 5 hectares have been leased to recyclers under this arrangement. In the coming months, another three short-term tenancy sites in Kwai Chung and Sheung Shui will be available for recyclers.

#### Enhancing Community Participation and Involvement

10. In May 2002, we injected \$100 million into the Environment and Conservation Fund (ECF), of which about 60% has been earmarked for community waste recovery projects undertaken by community organisations and green groups etc. So far, the ECF has granted about \$11.5 million for 31 community waste recovery projects.

11. The Environmental Campaign Committee has also been organizing territory-wide campaigns to promote waste prevention and recovery. For instance, it organises annual campaigns at public/private housing estates and schools to promote waste separation to residents and students. In addition, waste prevention and recovery has been the main theme of the annual World Environment Day and Environmental Protection Festival in the past few years.

#### Enhancing Publicity and Public Education

12. We have launched a large-scale publicity campaign, including two Announcements of Public Interests, TV programmes on waste reduction, visits by a theme van on waste problems to shopping centers and schools, and housing developments etc. Special exhibitions and roadshows are also held in shopping centres to publicise the message of waste prevention and recovery. In 2002, we trained some 17,400 voluntary environmental protection ambassadors to promote waste reduction and recovery in schools, housing estates and the community. We have also developed education materials on waste separation and prevention for use by teachers in primary and secondary schools.

13. Since September 2001, the Environmental Protection Department (EPD) has widely publicized its recycling hotline to provide advice on waste reduction and

separation. The hotline now receives about 80-100 enquiries<sup>5</sup> per day, compared to about 8 calls per day before September 2001.

### Government Leadership

14. To demonstrate leadership and set an example to the community, Government has taken a number of measures in waste reduction and recovery. For instance, in 2002, 20 departments have made special efforts in reducing paper consumption by over 10%<sup>6</sup> when compared with 2001. Compared with 2000, the number of printed copies of the Government Gazette has reduced by over 70% to 1,250 copies. We have extended the use of retreaded tyres to all Government medium and heavy vehicles. Where practicable, departments involved in greening work are encouraged to use compost made from organic waste.

15. With regard to green procurement, the Government Supplies Department has been updating product specifications and tender assessment criteria by taking into account the environmental considerations where appropriate. EPD has also commenced a consultancy study in December 2002 to update the green specifications of products which would be useful for future reviews on the product specifications.

### Producer Responsibility Schemes

16. Together with the telecommunication and mobile phone battery industries, EPD launched a pilot mobile phone battery recycling programme<sup>7</sup> in April 2002. This is the first voluntary product responsibility scheme in Hong Kong. Since the launch of the programme in April 2002, about 2.5 tonnes of mobile phone batteries (about 40,000 pieces) have been collected for recycling by the industry. The results of this programme will provide us the necessary information and experience for planning similar industry-based product responsibility schemes in the future.

### Close Cooperation with the Business Sector

17. We have been working closely with the business sector, particularly property management companies and hotels, with a view to encouraging them to take a more active role in waste reduction and prevention. Examples include leftover food donation programme and plastic bottles and textile recycling programmes specially designed for

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<sup>5</sup> About 51% of the enquiries requested for information on waste collectors/recyclers; 10% on matters related to waste recovery programmes; 5% on issues related to waste separation bins and the remaining on information related to waste recycling.

<sup>6</sup> The rate of reduction in paper consumption range from 11% to 72%.

<sup>7</sup> This is a 12-month pilot programme lasting from April 2002 to March 2003. The industries are considering to extend the programme to late 2003.

hotels, as well as plastic bag recovery programmes involving supermarket chains, convenience stores and shopping malls.

18. Since 1999, the Environmental Campaign Committee has been organizing the Hong Kong Eco-Business Awards each year to encourage businesses to adopt more environmental friendly practices in their operations. Waste reduction and recovery is one of the key assessment criteria for the Awards. EPD also launched the “Wastewi\$e” Scheme in 2000 to encourage businesses to organize waste reduction measures. So far, over 400 entities have enrolled in the Scheme and 41 have been awarded the “Wastewi\$e” logo to commend their achieving the waste reduction targets.

#### Close Cooperation with District Councils

19. EPD has been collaborating with District Councils<sup>8</sup> in carrying out various types of district-based waste prevention and recovery campaigns. We consider that such campaigns are extremely useful and meaningful, as the District Councils are in a better position to assess the needs of the districts, and at the same time can mobilize the support of local residents.

#### Other Measures to Handle Difficult Waste

##### *(a) Plastic Bottles*

20. As plastic bottles are bulky and light, their transportation cost is high, and some housing estates experience difficulties in securing recyclers to collect their recovered plastic bottles. To address this problem, EPD has since April 2001 hired contractors to collect plastic bottles from public/private housing estates to prevent them from being dumped in landfills. Currently, over 340 housing estates that have difficulties in handling plastic bottles are using this free service. Although this service does not cover all the 1,200 estates that have installed the 3 bins, we notice that it has more than doubled the volume of plastic bottles collected.

21. Separately, the ECF has provided funding for the Hong Kong Productivity Council to develop compactors so as to reduce the bulkiness of plastic bottles and lower their average transportation cost. Some of the compactors are currently under field trial. We will also experiment whether mobile compactors could be installed on trucks to facilitate collection of plastic bottles. We will evaluate if this measure, as well as the collection service mentioned in para 20 above, could help reduce the transportation cost of plastic bottles.

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<sup>8</sup> In 2001/2, EPD collaborated with Central & Western, Eastern, Islands, Kowloon City, Kwai Tsing, Shamshuipo, Shatin, Tsuen Wan, Tuen Mun, Wanchai, Wong Tai Sin and Yuen Long District Council. In 2002/3, EPD collaborated with Central & Western, Eastern, Islands, Kwai Tsing, Sai Kung, Shamshuiipo, Southern, Tsuen Wan, Tuen Mun, Wanchai, Wong Tai Sin and Yuen Long District Council.

*(b) Plastic Bags*

22. We are also examining whether recycling of plastic bags is practical and economically viable. In August 2002, we started placing plastic bags collection bins in eight housing estates and 109 convenient stores /supermarkets in their vicinity. So far, the results have been encouraging. We will expand the trial scheme shortly, and will evaluate the effectiveness of recovery of plastic bags in the second half of 2003.

*(c) Electrical & Electronic Appliances*

23. We have also been exploring the feasibility of utilizing waste management facilities to facilitate waste recovery. For instance, we have in mid 2002 set up a pilot recycling plant at the Northwest New Territories Transfer Station to recover discarded electronic and electrical appliances collected in the nearby areas. So far, about 1,000 appliances have been recovered. We will review the cost-effectiveness of the plant and the recovery programme in late 2003.

*(d) Waste Tyres*

24. We intend to carry out a six-month trial recycling programme for waste tyres, and have recently invited tender from recyclers to recycle waste tyres collected at the Kowloon Bay Transfer Station. We aim to commence the contract in April 2003.

**Results of the Measures**

25. The initial results of the aforesaid measures indicate that our efforts to promote waste prevention and recovery in the past 18 months have been generally useful, and that we are moving towards our targets set out in paragraph 4 above. Details are as follows:

- (a) the quantity of MSW requiring disposal has been maintained at 3.4 million tonnes each year in 2000, 2001 and 2002. This compares favourably with the 3.5% annual growth rate in the years before 2000;
- (b) the overall MSW recovery rate has risen from 34% to 36% in 2001<sup>9</sup>;
- (c) the domestic waste recovery rate has risen from 8% to 13.5% in 2001<sup>10</sup>;
- (d) compared with 1999, the total amount of recyclables collected from the 3 bins in 2002 has increased substantially from 19160 tonnes to 146,820

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<sup>9</sup> The 2002 figures are not yet available.

<sup>10</sup> This is based on surveys carried out in late 2001. We are carrying out further investigations at the moment to verify this figure and to ascertain the waste recovery trend in the domestic sector.

tonnes (comprising paper, from 18,700 tonnes to over 140,000 tonnes; aluminium cans, from 460 to 5,420 tonnes; and plastic bottles, from 0 to 1,400 tonnes). This has not yet taken into account the recyclables taken away by scavengers;

- (e) in 2002, the recyclables recovered from the 3 bins, which amounted to 146,820 tonnes (not including those recyclables taken away by scavengers), represented over 4% reduction<sup>11</sup> in the amount of MSW disposed of in landfills;
- (f) there has also been increasing public participation in waste recovery. In 1999, only 132 housing estates had put in place the 3 bins. Today, over 1,200 housing estates, covering some 1.5 million households and two-thirds of the population, have installed the 3 bins in their premises. The average yield per household per month has also increased – from 5 to 11 newspapers; from 3 to 17.5 cans, and from 0 to 2.4 plastic bottles; and
- (g) in terms of public awareness, annual surveys<sup>12</sup> shows that this has raised substantially. In 2000, about 62% of people have used the waste separation bins. This has gone up to 70% in 2001 and 82% in 2002.

## The Way Forward

26. We will continue our efforts in promoting waste separation and recovery. Apart from carrying on with the abovementioned measures, we will introduce some new initiatives in the coming year.

### Pilot Project on Wet/Dry Waste Sorting

27. We will try out other waste recovery systems with a view to identifying one that is most cost-effective and best suit local needs. In particular, we will launch a pilot project on wet/dry waste sorting to test the economics and logistics of this form of waste recovery which has been practised in some overseas economies but never in Hong Kong<sup>13</sup>. The pilot project will be carried out in four housing estates (covering about 8,000 households) in the Eastern District. It has recently commenced and will last 12 months.

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<sup>11</sup> Total amount of recyclables recovered from the bins in 2002 ÷ (Total amount of MSW disposed of at landfills in 2002 + total amount of recyclables recovered from the bins in 2002).

<sup>12</sup> These surveys are commissioned by the Environmental Campaign Committee and carried out by the Lingnan University in 2000 and 2001, and by the University of Hong Kong in 2002.

<sup>13</sup> The pilot project is jointly organised with a non-Government organization, which has obtained ECF funding to carry out wet/dry waste sorting in several housing estates.

28. Under the pilot project, dry waste would be separately collected and delivered to a temporary sorting facility at the Island East Transfer Station where recyclables would be recovered for recycling purpose. Wet waste would continue to be disposed of at landfills. Upon the completion of the pilot project, we will carry out a review to examine the feasibility, logistics and cost-effectiveness of this form of waste recovery.

#### Mercury Lamps

29. We will install a set of equipment at the Chemical Waste Treatment Centre in late 2003 to recover mercury from mercury lamps. Initially, the facility will handle mercury lamps disposed of by Government departments. We estimate that about 400,000 lamps can be handled in the first year. We will then evaluate the effectiveness and logistics of the system to see if the service could be extended to recover mercury lamps arising from commercial buildings and other waste with mercury content.

#### Continuation of the Existing Measures

30. We will continue our publicity and public education work. We will also encourage and provide the necessary support to community organizations and green groups to carry out community waste recovery projects. Funding support will continue to be available through the ECF for these organisations to implement these projects. We will also continue our collaboration with district councils and business entities to carry out different types of waste prevention and recovery campaigns.

#### **Other Waste-Related Issues**

31. We are currently working on the detailed proposals and arrangements associated with the landfill charging scheme, and will submit the proposals to this Council shortly. Separately, regarding the selection of technologies for the development of large-scale waste management facilities in Hong Kong, we invited expression of interest from the local and international waste management industry last year. We then set up an advisory group, comprising mainly non-officials, in late 2002. The group is now evaluating the proposals received. We will report the group's recommendations as soon as they are available.

#### **Conclusion**

32. Members are invited to note the progress of Government's measures to promote MSW prevention and recovery.

**Environment, Transport and Works Bureau  
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