

THE HONG KONG INSTITUTION OF ENGINEERS  
ENVIRONMENTAL DIVISION CUM  
THE HONGKONG INSTITUTION OF ENGINEERS  
YOUNG MEMBERS COMMITTEE,  
HONG KONG WASTE MANAGEMENT ASSOCIATION AND  
INSTITUTION OF MECHANICAL ENGINEERS (HONG KONG BRANCH)  
SEMINAR ON HONG KONG'S COMPREHENSIVE WASTE MANAGEMENT  
STRATEGY FOR COMING 10 YEARS

The evening seminar was given by Ir Dr Alain Kwok-Lun Lam, Principal Environmental Protection Officer of Environmental Protection Department (EPD) of Hong Kong SAR Government on 21 February 2014, outlining the waste problems, the blueprint for sustainable use of resources and the associated action plans for coming ten (10) years in Hong Kong.

14,000 tonnes of waste generated per day are classified as (i) municipal solid waste (MSW) encompassing domestic, commercial and industrial refuse (67 %), (ii) construction waste (25 %), (iii) sludge generated in waste water treatment process and (iv) others such as animal and clinical wastes [8 % for both (iii) and (iv)]. The current large waste load, compounded by the incomplete infrastructure has led Hong Kong to the refuse crises. In terms of kilogram of domestic waste generation rate per capita, Tokyo (0.77) is at the top of the best performance rank in the major Asian cities, followed by Seoul (0.95), Taipei (1.00) and Hong Kong (1.36). Hong Kong is the only Asian city equipped with no incineration.



To 2012, the ratio of landfill versus recycling is 61 % to 39 %, as compared with recycling of 48 % in 2011. The decreasing trend in recycling is due to all recycled materials collected are exported, principally plastics to the mainland China, while the export demand has dropped following the “green fence” policy imposed by the mainland government. Concurrently, the landfill sites in Hong Kong are approaching their exhaustion. The first

exhausted landfill is South East New Territories Landfill (in 2015) and then North East New Territories Landfill (in 2016), while the remaining West New Territories Landfill is expected to be in 2019. The situation of sole reliance on landfill is unsustainable.

In 2013, the government issued “Blueprint of Sustainable Use of Resources” (Blueprint) which outlines the waste management hierarchy, namely (i) prevention (reduce quantity and type), (ii) reuse (repair and reuse old items), (iii) recycling (reprocess of waste), (iv) recovery (waste-to-energy) and (v) disposal. The target is to reduce the daily MSW disposal from 1.27 kg/capital (in 2011) to 1.00 kg/capital (in 2017) and finally 0.80 kg/capita (in 2022). Though the reduction of 0.47 kg in ten (10) years per capita may be relatively trivial, after multiplying the population in the territory of over seven (7) million, the amount of waste reduction is substantial.

The Blueprint paints the action plans in the coming ten (10) years as follows.

### Prevention – MSW Charging

The principle of MSW charging is to use levying as an economic incentive that changes behaviour and leads people to cut down waste generation.

Over the three (3) month public consultation, 60 % of the written responses supported the “polluter pays” principle and, out of the various charging regimes proposed, including fixed or standard rate, tie-in with water consumption and quantity-based or “pay-as-you-throw”, the quantity-based charging scheme was preferred. Concerning the charging mechanism, coverage of charging scheme, charging level and recycling were explored via public engagement conducted by the Council for Sustainable Development:-

- Charging mechanism: Various means of charging domestic waste disposal were discussed, (i) by household by volume (using designated bags for waste collection), (ii) by building by weight [the identification of who has dumped is ascertained by manual recording or reading of bar-code or radio frequency identification (RFID) attached to refuse bins, and how much has been dumped by the use of refuse truck-mounted scale together with RFID] and (iii) by building by volume (by counting the number of 660 litre refuse bins collected).
- Charge coverage: currently commercial and industrial refuse is collected by private waste collectors which only charge the waste producers the collection cost and no disposal cost is incurred because the use of landfill is free of charge at present; in future, however, the disposal of such waste in landfill will be levied and the waste producer will have to bear the cost of both collection and disposal.
- Charging level: currently only the disposal of construction waste is levied; yet following the introduction of MSW charging scheme, the construction waste charge level is subject to revision.
- Recycling: the provision of sufficient recyclable waste disposal outlets is a prerequisite for the introducing charging scheme in any form.

### Prevention – Producer Responsibility Scheme

For the minimisation of waste generation and promotion of reuse and recycling, producer responsibility scheme (PRS) is introduced to engage stakeholders along with supply chain (encompassing manufacturers, importers, distributors, retailers and consumers) to share eco-responsibility of proper treatment, recycling and disposal of end-of-life products. PRS follows the cycle of source separation, efficient collection, proper treatment and reuse or recycling outlets, which is funded by charging a levy on new products.

The first PRS was plastic shopping bag levy, which has transformed the consumer habit of using plastic bags. While currently 47 retailers with about 3,500 retail outlets have been covered, it is contemplated to extend the scheme to the entire retail sector in April 2015.

The second PRS is on waste electrical and electronic equipments (WEEE), covering television sets, fridges, washing machines, air-conditioners and computer products. In future, sellers will have to provide take-back service of WEEE, while the WEEE collected will be processed in a new WEEE Treatment Facility in EcoPark, Tuen Mun. With the design process capacity of 30,000 tonnes per annum, contract award and commission of the Facility is expected to be in mid-2014 and end 2016 respectively. The Facility operator shall provide sound traceability over the outgoing of the recycled materials.

The third PRS is glass beverage bottles, which gained 70 % support in the public consultation conducted in 2013. Same as MSW charging scheme, the expansion of glass bottle collection network is required.

#### Recycling and Recovery – Community Green Station

Community Green Station will be established one in each of 18 districts in Hong Kong, being the focal point of low-value recyclable material collection as well as education to public and the nurture of green culture to the young generation, who in turn educates their parents. The recyclable materials collected will be sent to EcoPark for reprocessing, which logistics will be provided by government funded non-government organisations.

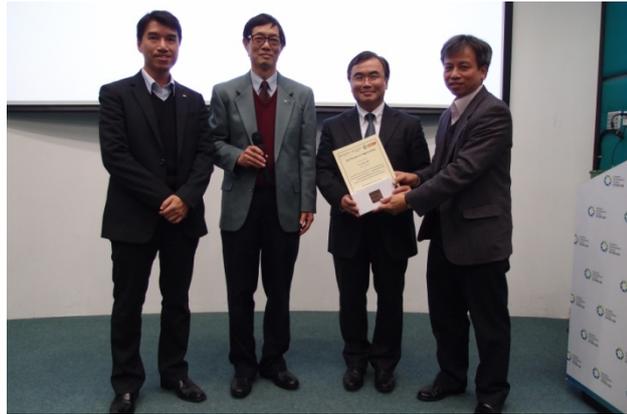
#### Recycling and Recovery – From Waste-to-Energy

The Sludge Treatment Facility is a waste-to-energy infrastructure which is capable to transform 2,000 tonne of sludge per annum into electricity using fluidised bed incinerator. The project of capital cost of HK\$5 billion will provide 2 MW of electricity output to the grid.

The Organic Waste Treatment Facility (OWTF) decomposes 500 tonnes per day of organic wastes, principally food waste (pre-salted ingredients preferred), into composed products and synthesis gas suitable for power generation. Two (2) sites of three (3) hectare each have been identified and the targeted commission of the first and second OWTF is in 2016 and 2018 respectively.

The Integrated Waste Treatment Facility (IWTF) comprises a state-of-the-art incinerator with 3,000 tonnes per day capacity. Funding approval will be sought in the second quarter of 2014, while the construction and commission commencing in 2016 and 2021/2022 respectively is projected. Besides, there will be a three (3) year gap between the exhaustion of all landfills and the full operation of IWTF, which poses a challenge to the waste management at that time.

In conclusion, solely waste recycling is insufficient to tackle the refuse crisis ahead, whereas Hong Kong definitely needs modern facilities together with landfill extensions to lead to resources recovery, a paradigm shift from the concept of waste management. The legislature has shared with the administration's concern that time is running out and decision must be taken without



further delay. From the administration points of view, the bundled IWTF and extension of three (3) landfills altogether is an integral package of waste management or recovery and hence should not be separated.

The organisers thank Ir Dr Lam for the delivery of the insightful, informative and thought-provoking evening seminar.

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