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THE LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS

Producer Responsibility Scheme on Glass Beverage Bottles

Introduction

This paper briefs Members on the latest development on preparation for the implementation of the mandatory producer responsibility scheme ("PRS") on glass beverage bottles in Hong Kong, including the necessary legislative proposals for establishing the statutory regulatory framework.

Background

2. Glass bottles are widely used in our everyday life. We do not have a local glass manufacturing industry. Due to their low residual commercial value, at present, most of the waste glass bottles generated in Hong Kong are disposed of at landfills rather than being reused or recycled. In 2013, they constituted about 2.7% of our daily municipal solid waste ("MSW") disposal, including about 166 tonne per day ("tpd") of beverage bottles, about 85 tpd of food/sauce bottles and about 7 tpd of other bottles. However, waste glass bottles are often recycled and turned into bottles elsewhere in the world. There are also applications which turn waste glass bottles into building materials, concrete and paving applications, in place of river sand and other natural resources.

3. As committed under *Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022* ("*The Blueprint*"), we will progressively implement mandatory PRSs based on the "polluter pays" principle. We conducted a public consultation in 2013 and on the basis of the positive response, affirmed the direction of introducing a mandatory PRS that first targets at glass beverage bottles but can be expanded in future to cover other product containers. We reported the outcome of the public consultation to this Panel in November 2013 and proposed the way forward. Since then, we have been proactively undertaking the relevant preparatory work as detailed in the ensuing paragraphs.

Establishing a Circular Economy for Glass Bottles

4. With the support of relevant complementary measures, the objective of the mandatory PRS is to establish a circular economy whereby the waste glass beverage bottles generated in Hong Kong can be effectively collected and properly treated to become reusable resource. In the past years, the Government has taken various measures in establishing this circular economy. Amongst other things, we have been supporting a number of voluntary recycling programmes that are funded through the Environment and Conservation Fund ("ECF") or other sources in order to accumulate practical experience in relation to glass bottle recycling. Waste glass bottles collected under these programmes are mostly crushed as granules to produce concrete paving blocks ("eco-pavers") for use in construction projects.

Proper Facilities and Practice for Separation at Source

5. We have considerably expanded the glass bottle collection network in the past two years. As at March 2015, there are a total of 1,200 collection points in residential estates, equivalent to an approximate population coverage of 69% [1], and some 500 collection points in other premises and public places. Amongst others, all public rental housing estates [2] under the Hong Kong Housing Authority have set up glass bottle collection points. We will continue to support the progressive expansion of the collection network within the limit of our existing resources.

6. In parallel, we have stepped up publicity and public education so as to better facilitate members of the public to put the "clean recycling" concept into practice. Relevant measures include –

(a) we have improved the outlook of the glass bottle recycle bins (see Annex A) and the new design features relevant green tips that may better remind users of the need to "rinse before recycle";

(b) we have set up a dedicated website to facilitate dissemination of information about our glass bottle

1 As at end 2012, before the 2013 public consultation, a total of 270 collection points have been set up across the territory; over 120 public/private housing estates have participated, covering some 880 000 people (i.e. around 12% of the total Hong Kong population).

2 A few public rental housing estates on outlying islands are covered by collection points set up in public places on the islands.

recycling programmes and promote proper recycling procedures. Location of glass bottle recycling points is also searchable through the mobile app "Waste Less";

(c) we have produced a series of announcements of public interest ("APIs") about proper recycling procedures, including one episode promoting "rinse before recycle" for glass bottle recycling. Apart from being broadcast on television, the APIs can be viewed on the Internet at http://www.isd.gov.hk/eng/tvapi/14_ep144.html and shared through social media; and

(d) we are developing Community Green Station ("CGS") in each of the 18 districts. The objectives of setting up CGSs are to promote environmental education on one hand and to support recycling at the community level on the other. One of our priorities is to promote the "clean recycling" concept in the community such that members of the public will not only separate recyclables (including waste glass bottles) from waste but will also properly rinse such recyclables before depositing them into recycle bins.

Efficient Collection Services for the Glass Bottle Collection Points

7. Through monitoring the collection services provided by contractors under different glass bottle recycling programmes, we have been accumulating practical experience with a view to improving the performance standards in terms of cost effectiveness, nuisance avoidance and other operational aspects for the longer term.

8. When the mandatory PRS is implemented to support glass bottle recycling in a territory-wide scale, we will hire up to three contractors (called Glass Management Contractors ("GMCs")), serving the catchment regions of Hong Kong Island, Kowloon and the New Territories respectively. Within its responsible catchment region, the responsible GMC will be required by contract to –

(a) coordinate with CGSs to manage the glass bottle collection services provided to residential buildings/estates in the catchment region;

(b) maintain a sufficient network of collection points such that waste producers (mainly pubs and bars and other catering services) may conveniently participate in waste glass bottle

recycling;

(c) accept all properly rinsed waste glass bottles (including food/sauce bottles) with a view to meeting a recovery target which will ramp up over time to ultimately a territory-wide total about 50 000 tonnes (or more than 50% of the estimated local generation) per year [3]; and

(d) arrange gainful reuse of the waste glass bottles or properly treat them in its own plant or through outsourcing until they become reusable materials.

Proper Treatment Processes to Turn Glass Bottles into Resource

9. Used glass bottles are often reused or recycled for making new bottles elsewhere in the world. Doing so is beneficial to the environment because it can save energy used in the manufacturing process of glass from raw materials. But in Hong Kong where we do not have a strong presence of the relevant industries, waste glass bottles may be crushed into cullet for use as construction materials such as eco-pavers and partition bricks. For instance, works departments have been using eco-pavers in public works. By now, about 6 000 tonnes of recovered glass materials is reused annually in the manufacturing of eco-pavers.

10. There are also other applications in certain public works (such as reclamation, earthworks including site formation and backfilling and road sub-base) that may absorb recycled glass materials as fill material. At this stage, technical specifications for some of these applications have been drawn up. The technical specifications will help determine the necessary treatment processes to be deployed for crushing the glass bottles into cullet of the appropriate size. Since then, some selected works projects have on a pilot basis been selected to absorb recycled glass materials. About 35 tonnes of glass cullet was so reclaimed for beneficial use in 2013 and about 500 tonnes in 2014.

11. Separately, the Construction Industry Council has funded studies to explore the use of glass cullet as a substitute to river sand. In the past three years, an average of about 1.5 million tonnes of river sand was

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3 It is estimated that the ultimate collection target for individual GMCs is 18 400 tonnes for the Hong Kong Island catchment, 19 400 tonnes for the Kowloon catchment and 12 200 tonnes for the New Territories catchment which add up to a total of 50 000 tonne per annum. It is drawn up with reference to the profiles and sizes of population and commercial establishments in beverages/retails/restaurants and related businesses in their catchment areas.

imported annually from outside Hong Kong, mainly for use in the local construction industry. Subject to positive findings, it will provide another useful outlet of waste glass collected locally.

Sustainable Outlets of Recycled Glass Materials

12. With the implementation of a mandatory PRS, the amount of glass bottles recovered and recycled will increase over time. In terms of handling capacity, currently, there are several private recyclers who possess the technical know-how to produce recycled glass materials from waste glass bottles for use in the manufacturing of eco-pavers. Individual businesses have indicated interest in entering the market and we are aware of at least one new glass bottle processing/treatment line being installed by a local recycler in the past two years. We will continue to update the recycling industry about our PRS planning, which will facilitate potential investors in deciding on their business plans.

13. Apart from the production of eco-pavers and other construction materials, waste glass with suitable crushing could be used as fill materials in reclamation and other earthworks. Taking into account the amount of fill materials needed in local projects, we are of the view that the estimated collection of 50 000 tonnes of waste glass bottles per annum could be gainfully reused. We also welcome the private sector to similarly adopt "green procurement" in their works projects.

"Polluter Pays" Principle

14. As the practical experience from the various voluntary glass recycling programmes could tell, high logistics cost is one of the key impediments to efficient collection of waste glass bottles. In 2013, the ECF supported three different recycling programmes which conducted public education and collected about 1 160 tonnes of waste glass bottles at a total funding of about $4 million. Financed from within the trade, the Hong Kong Hotels Association practices bulk collection which can be more cost effective, but also spent some $0.5 million for the collection of some 760 tonnes of waste glass bottles in 2013.

15. The territory-wide PRS will benefit from economy of scale but will still require substantial financial resources. A recycling fee is proposed to be imposed on glass-bottled beverages to finance the PRS, as to be discussed in paragraphs 20 and 21 below. On balance, we consider that there are overall merits to promote glass bottle recycling through a PRS because –

(a) without a mandatory PRS, collection of waste glass bottles and treating them to become resource cannot be done on the market forces. On the other hand, with a mandatory PRS, new opportunities will be created for the environmental industry which may in turn provide green jobs;

(b) more recycling will result in reduction of glass bottles disposed of at the landfills and thus saving the limited landfill space and the valuable land cost. As glass may substitute river sand, glass bottle recycling will help reduce dredging work for river sand extraction which could disturb marine life and might cause damage to the river bed and the associated ecological system; and

(c) while the total costs for construction materials manufactured with recycled glass will most likely be higher than those made from conventional materials, given the collection and treatment of waste glass bottles, the cost difference could be smaller under a mandatory PRS as compared with that under entirely voluntary programmes because the former would better ensure economy of scale. For public works projects that use products manufactured with recycled glass, we envisage the cost impacts would be insignificant in the overall project costs in most cases. Suitable mechanism will be introduced to monitor such impacts and keep the additional costs if any within an appropriate extent.

Statutory Regulatory Framework for the PRS

16. There is no alternative other than a mandatory PRS as proposed that may put in place a territory-wide solution for the proper management of glass beverage bottles. For instance, the existing voluntary recycling programmes only serve the purposes of enhanced public education about glass bottle recycling and accumulation of experience for the longer term. They have limited capacity and can only handle several thousand tonnes of waste glass bottles annually (below 5% of the total disposal). Also the funding support for such voluntary programmes is mostly time-limited, intending to bridge over the preparatory period before the mandatory PRS is fully implemented.

17. With the satisfactory progress in the preparation work as explained in paragraphs 4 to 13 above, we aim to introduce legislation to

provide for the statutory regulatory framework for the mandatory PRS. That will involve amendments to the Product Eco-responsibility Ordinance (Cap. 603) ("PERO") and the Waste Disposal Ordinance (Cap. 354) ("WDO") as outlined follows –

Scope of Regulation

18. The PERO seeks to minimize the environmental impact of various types of products by introducing PRSs based on the "polluter pays" principle. At present, it contains provisions for discouraging the excessive use of plastic shopping bags through a mandatory charge at retail level. We have also introduced legislative amendments for the implementation of a mandatory PRS targeting at certain regulated electrical equipment. We ***propose*** to further apply the PERO to a new class of regulated products (generally referred hereinafter as "regulated articles") covering glass bottle, jar or container of other shapes of beverages (collectively as "glass beverage containers") distributed or consumed in Hong Kong.

19. We have not proposed to cover all glass-bottled products under the mandatory PRS. The reason is that during the 2013 public consultation, different stakeholders expressed concerns about contaminations of the waste glass bottles causing nuisance and hence undermining public acceptability of the new PRS. At the treatment end, contaminations may also undermine product quality and hence the marketability of the recycled glass materials. Also applying the mandatory PRS to glass food/sauce bottles at this stage, which may necessitate charging a recycling fee on such household items, may lead to a potential livelihood concern. That said, we are committed to encouraging the recycling of all other properly rinsed waste glass bottles including those previously used to contain food or sauce. We will NOT seek to reject the deposit of properly rinsed glass food/sauce bottles and will continue to arrange their proper recycling even after the future mandatory PRS is in place. Subject to future review, the mandatory PRS may be expanded to cover glass-bottled food/sauces. This phased approach is more prudent and will allow more time for public education on the "clean recycling" concept to gradually take root in the community.

Charging of Recycling Fee

20. In line with the "polluter pays" principle, we will impose a recycling fee on the regulated articles so as to recover in principle the full PRS costs. To this end, we ***propose*** to collect the recycling fee from suppliers. We have considered the alternative of collecting the recycling

fee at the points of sale, but this approach is far less cost effective given the vast number of catering or retail establishments. Having further engaged the trade, the mechanism for collecting the recycling fee is outlined as follows –

(a) *Registration of suppliers*: Manufacturers and importers who carry on a business of distributing regulated articles in Hong Kong will have to be registered as "registered suppliers". By "manufacturers", we are targeting at the persons who undertake the process of sealing the container comprising the regulated articles;

(b) *Submission and auditing of periodic returns*: A registered supplier will have to submit to the Director of Environmental Protection periodic returns, setting out information that is necessary for the computation of the recycling fee payable. The registered supplier will also have to engage an independent auditor to conduct annual audits on the periodic returns to ensure factual accuracy and keep records to facilitate future inspection. The detailed reporting requirements will be prescribed by regulation; and

(c) *Payment of the recycling fee*: Within a specified period of time after receiving a payment notice from the Government, a registered supplier will have to pay the recycling fee to the Government on the basis of the information contained in the periodic returns. We will only collect the recycling fee for regulated articles that are "distributed" or "consumed" in Hong Kong by which we will exclude (i) exports of locally manufactured glass-bottled beverages and (ii) re-exports of imported glass-bottled beverages. We will prescribe the level of the recycling fee by regulation in due course after ascertaining the full PRS costs.

21. At present, it is premature to ascertain the full costs of the PRS before the open tenders of the GMC contracts. We will prescribe the specific level for the recycling fee by way of subsidiary legislation to be introduced in the next stage. But during the 2013 public consultation, stakeholders and members of the public noted that overseas experience suggests an indicative figure of around $1 per litre bottle volume.

<u>Exemption</u>

22. At present, a small number of local glass-bottled beverage

manufacturers have their own arrangements by which waste glass bottles of their brands are collected for re-bottling after proper cleansing and sterilisation. The reuse of waste glass bottles is beneficial to the environment because it can save a lot of the energy used in the manufacturing process of glass from raw materials. We encourage the continuation of these reuse arrangements which are underpinned by robust and reliable monitoring and auditing system to ensure the glass beverage bottles are recovered effectively. We therefore ***propose*** to establish an exemption mechanism such that a registered supplier may apply by submitting a reuse/recycling plan setting out the relevant operational details. Subject to meeting certain performance standards and other terms and conditions, glass-bottled beverages covered under a sound reuse/recycling plan will not be charged a recycling fee. The exemption will be subject to an application fee (on full-cost recovery basis). We will further engage the trade and draw up the detailed requirements at the next stage.

Proper Treatment of Waste Glass Containers

23. Where glass containers have been abandoned to become waste, we ***propose*** to apply the licensing control under section 16 of the WDO to its disposal (including storage, treatment, reprocessing and recycling). The proposed licensing requirement seeks to ensure that their operations are compatible with the PRS system which will put in place a circular economy for turning waste into resource that is reusable. As a matter of principle, the licence will only be issued after a recycler has demonstrated that he has deployed a recycling process that is sound from safety and health as well as environmental perspectives and the recycled glass materials produced from this process can satisfy the technical specifications for their reuse in subsequent manufacturing processes.

Movement Control of Waste Glass Containers

24. Our plan to hire GMCs through open tender to provide the collection and treatment services under the mandatory PRS can be implemented administratively without legislative amendments but the GMCs will have to be properly licensed under the WDO to undertake the treatment of waste glass containers.

25. On the other hand, we ***propose*** that importers and exporters of waste glass containers be subject to permit control under the WDO. Similar to the corresponding control proposed for e-waste, no waste glass containers can be exported unless it can be demonstrated that they will be properly reused or recycled through processes which are no less

competent than a licensed treatment facility in Hong Kong. Imports of container waste into Hong Kong will be subject to control to ensure that if there is such shipment, there will be a licensed local recycler undertaking proper treatment.

Implementation Timetable

26. We are preparing the legislative proposals for the implementation of the mandatory PRS on glass beverage bottles and aim to introduce them into the LegCo as soon as practicable. In parallel, we will continue to expand the glass bottle recycling network and step up publicity and public education.

Advice Sought

27. Members are invited to note the above progress in introducing the mandatory PRS on glass beverage bottles. We also welcome Members' views on the preparatory work that is necessary to put in place a territory-wide glass bottle recycling scheme in Hong Kong.

Environment Bureau / Environmental Protection Department
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Annex A

New Outlook of the Glass Bottle Recycle Bins

The new design features relevant green tips on the proper recycling procedures for glass bottles, including (i) to remove bottle cap first, (ii) empty content, (iii) rinse briskly and (iv) bottle-in gently.