



Consultation Document on a New Producer Responsibility Scheme on Glass Beverage Bottles

LET'S JOIN HANDS TO
TURN WASTE INTO RESOURCE



環境保護署
Environmental Protection Department

TAKE YOUR SHARE OF RESPONSIBILITY, CONTRIBUTE YOUR SHARE OF VIEWS



Contents

FOREWORD		P.2
Ch. 1	Glass Beverage Bottles and Our Environment	P.4
Ch. 2	Act Now for a Producer Responsibility Scheme	P.10
Ch. 3	Your Share of Eco-responsibilities	P.18
Ch. 4	Creation of a Circular Economy	P.28
Ch. 5	A Broader Picture: Beverage Containers in General	P.34
Ch. 6	We Look Forward to Your Views	P.40
Annexes	Annex A Producer Responsibility Scheme — Our Local Model	P.46
	Annex B Glass Recycling Programmes supported by the Government	P.47
	Annex C Overseas Experience in Asia in Promoting Glass Beverage Bottle Recycling through a Government-led Approach	P.49
	Annex D Potential Reuse of Glass Beverage Bottles in the Construction Sector	P.50
	Annex E Response Form	P.51



FOREWORD

This Consultation Document is the fourth in a series of initiatives to enhance our waste management through the progressive implementation of producer responsibility schemes (“PRs”) in Hong Kong. It builds upon the successful outcomes of the past PRs, with members of the public, the relevant trades as well as other stakeholders giving support to the first phase of an environmental levy on plastic shopping bags (2007), a second scheme on waste electrical and electronic equipment (2010) and the second phase of the plastic bag levy (2011).

The promotion of producer responsibility is an international trend where jurisdictions across the globe shape the behaviour of consumers and stakeholders along the supply chain by internalising the environmental costs into the life-cycle of consumer products. Such cost sharing has been proven to be an effective drive for waste reduction. This practice is taking root in Hong Kong as a core component of our waste management strategy.

The Government is keen to address the waste problem of glass beverage bottles. Doing so will not only save our limited landfill space but also help us to turn waste into a resource. As you read this document, you will see how our past efforts have led us to the current stage. It is now time to consider a mandatory PR. As always, we welcome your views. We also call on your support — only with that can we create a sustainable local solution for glass beverage bottles.

K S Wong
Secretary for the Environment

ACRONYMS

PRS	Producer responsibility scheme
tpd	tonnes per day
WEEE	Waste electrical and electronic equipment
EPD	Environmental Protection Department
ECF	Environment and Conservation Fund
GMC	Glass management contractor
PET	Polyethylene terephthalate
HKHA	Hong Kong Housing Authority
PRH	Public rental housing



CHAPTER  1

GLASS BEVERAGE BOTTLES AND OUR ENVIRONMENT



1.1

The bulk of waste glass in Hong Kong is glass bottles (over 80%) and among which, a significant portion come from alcoholic drinks. As illustrated in Exhibit 1, in the past decade, the amount of waste glass bottles disposed of at landfills has stayed at around 250 tonnes per day (“tpd”), roughly equivalent to half a million 750mL bottles. That accounts for about 3% of our daily municipal solid waste disposal.

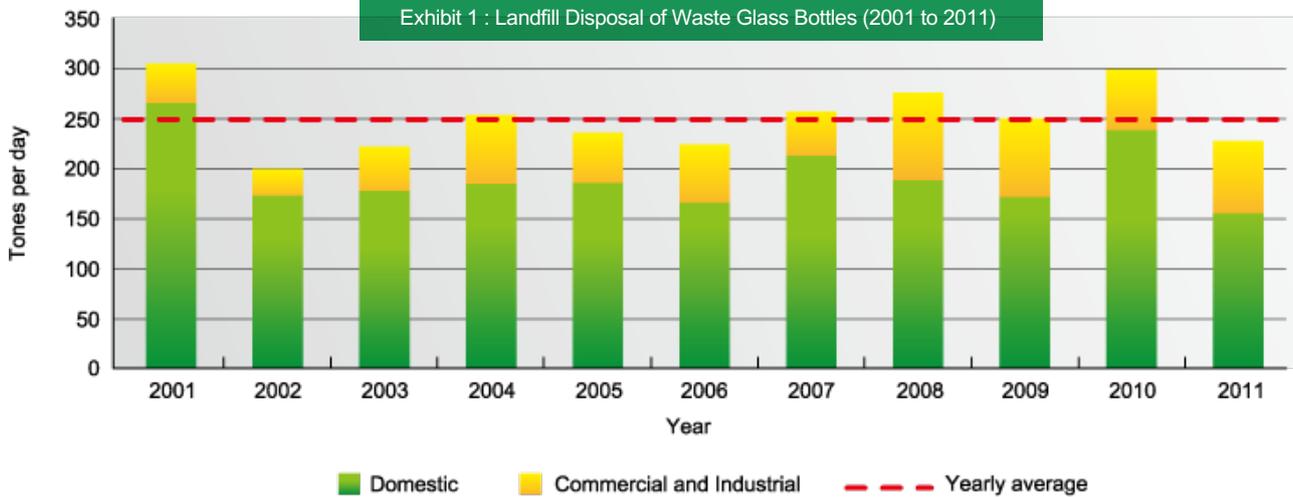


Do you know?

Glass is widely accepted as a recyclable material internationally

Glass consists mainly of silica, which is a natural raw substance like sand. Glass will unlikely pollute the environment or affect human health and thus can easily be reused and recycled. Glass is widely accepted as a recyclable material internationally.

Exhibit 1 : Landfill Disposal of Waste Glass Bottles (2001 to 2011)



1.2

Used glass is often recycled and turned into bottles elsewhere in the world. To recycle glass, it first has to be separated from the waste stream, then sorted and washed for re-bottling, or reprocessed into new bottles and other glass products. Recycling 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. There are also applications which turn waste glass into building materials, concrete and paving applications, in place of sand and other natural resources.



Glass is not waste but resource.

Prof. C.S. Poon of the Hong Kong Polytechnic University is one of the pioneers in Hong Kong conducting research on the potential applications of glass cullet in the construction industry. In 2004, he succeeded in substituting natural river sand with glass cullet for the production of paving blocks. Through on-going research, his subsequent findings have led to better performance eco-pavers suitable for wider uses in construction works.



Why glass beverage bottles have to end up in our landfills?

1.3

Not all the waste glass can be recycled in the same processes, however, glass products such as lamps, computer monitors or television screens may contain lead, mercury or other hazardous substances, which needs prior detoxification before recycling. Due to different physical properties, other glass materials such as tempered glass and glass cookware should not be mixed with ordinary glass bottles for recycling.



1.4

We wish to see beverage bottle recycling in Hong Kong, which accounted for 2/3 or 150 tpd (equivalent to 55,000 tonnes annually) out of all waste glass bottles in 2011. Among them, 130 tpd (i.e. over 85%) were from alcoholic drinks and 20 tpd (i.e. less than 15%) from non-alcoholic drinks.

The rest (about 1/3 or 90 tpd) contained food, sauce or other products. Beverage bottles are easy to clean, whereas the other bottles can adversely affect the recycling process if they are not thoroughly cleaned before recycling.

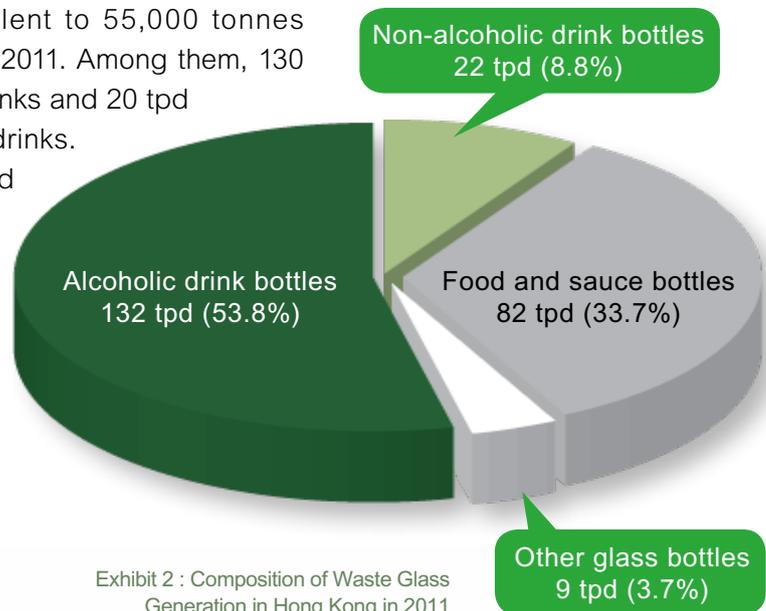


Exhibit 2 : Composition of Waste Glass Generation in Hong Kong in 2011



1.5

The majority of waste glass beverage bottles are currently landfilled in Hong Kong. But the limited space in the three existing landfills will be used up before 2020. This presents an urgent challenge to Hong Kong to reduce all types of waste, including glass. PRS is an effective means that must become an integral part of the strategy. A mandatory PRS is necessary because it will —

- (a) turn waste glass beverage bottles into a resource. This cannot be done without government intervention as glass has low commercial value;
- (b) lead to glass recycling which will in turn provide new opportunities for the environmental industry and in turn provide green jobs;
- (c) reduce the burden on landfills. Glass is non-combustible and is not suitable for any other treatment or disposal methods;
- (d) reduce the demand for other construction materials, such as river sand¹. Some of the side-products will have considerable impact on the environment;
- (e) stimulate behavioural change in source separation of used glass beverage bottles; and
- (f) catch up with many other jurisdictions which have already adopted forceful measures to deal with waste glass problems. Details will be given in the chapters to follow.

Remark :

1. River sand is commonly used in construction works. Dredging work for its extraction from rivers could disturb marine life and might cause damage to the river bed and the associated ecological system.





Do you know ?

“Deposit-and-Return”

We used to have an effective “Deposit-and-Return” system for recycling glass beverage bottles. Grocery stores and tuck-shops charge customers a small deposit which could be redeemed on return of a glass bottle after finishing the beverage. Such a system was underpinned by local re-bottling operations. Yet such operations have greatly diminished as a result of relocation out of Hong Kong or switch to other packaging materials. At present, only a few beverage manufacturers (e.g. milk, soft drinks) still maintain re-bottling operations and run “Deposit-and-Return” schemes.





CHAPTER  2

ACT NOW FOR A PRODUCER RESPONSIBILITY SCHEME



2.1

Waste reduction is the key for this term of Government as it is key to cut down our reliance on waste treatment and disposal facilities. We will implement policies to reduce, recycle, properly treat waste and promote the development of local recycling industries. We will also implement PRSs, and progressively extend the coverage of the Product Eco-Responsibility Ordinance (Cap 603).



I am proud to participate in glass recycling.

Mr. Sammy Yu of the MTR Corporation is actively involved in promoting glass bottle recycling in the residential estates and commercial buildings under the management of the Corporation. The “Bottle to Brick Recycling Programme” is one of the major private initiatives on glass bottle recycling. It demonstrates the commitment of individuals and the private sector to share out their eco-responsibility.



PRS on glass

beverage bottles must be built upon our local experience.

2.2

Hong Kong has gained considerable PRS experience through the successful Environmental Levy Scheme on Plastic Shopping Bags², which aims to change behaviour. We will shortly extend the coverage of plastic bag levy; we are also drafting legislation on another PRS dealing with waste electrical and electronic equipment (“WEEE”).

Remark :

2. The 50-cent levy creates a financial disincentive against excessive use of plastic shopping bags and the scheme covers about 3,000 registered retail outlets.



2.3

The new scheme on glass beverage bottles is planned with reference to the local PRS model as illustrated at Annex A. In gist —

- (a) Products are mostly imported (instead of manufactured) in Hong Kong. In other places with local production, domestic PRS measures create the incentives for businesses to adopt manufacturing processes and product designs that are more environmentally-friendly.
- (b) Relying on external operations will generate extra transportation emissions and does not offer sufficient reliability. Thus, our PRS strategy must aim to create a local solution comprising —

- (i) an efficient collection mechanism with key stakeholders mandated by laws or coordinated by a government management contractor to control the movement of products from consumers to treatment facilities; and
 - (ii) other statutory regulations, such as import/export control (to avoid dumping outside Hong Kong or leakage to neighbouring jurisdictions) and other licensing requirements (on collection, storage and processing etc.) to enforce minimum performance standards in the recycling operations.
- (c) In line with the “polluter pays” principle, there should be a recycling fee, pre-paid on new products and collected at some point of the supply chain, to recover the PRS costs.

Green procurement policy is a key
to glass beverage bottle recycling.

2.4

A local solution for waste glass beverage bottles must have outlets for the recycled glass. The Government took the lead through its green procurement³ policy. In 2004, a study funded by Environmental Protection Department (“EPD”) successfully used the granules from crushed glass beverage bottles to produce concrete paving blocks (“eco-pavers”). Through the promotion of green procurement, Highways Department has since October 2010 mandated the priority use of these eco-pavers for road maintenance contracts. Other public works departments and Housing Department have also started adopting the use of eco-pavers where appropriate. In 2011, about 171,000 m² of eco-pavers (absorbing some 4,000 tonnes of waste glass) were used in various public works, equivalent to covering the pavement of Nathan Road (both sides) for five times. We are also actively looking into other feasible applications of recycled glass in construction works.

Remark :

3. Green procurement refers to the purchasing of products and services that cause minimal adverse impacts on the environment. It incorporates human health and environmental concerns into the search for high quality products and services at competitive prices.



2.5

We encourage private sector participation in the use of construction materials that contain recycled materials (including recycled glass). For instance, private developers may join the government initiative to promote a wider use of eco-pavers or other feasible applications of recycled glass. The local building environmental assessment system, BEAM Plus, also awards credits for the use of recycled materials in buildings. This will increase the market demand for recycled glass in both public and private sectors and thus promote the growth of local glass recycling industry.



Voluntary schemes have boosted awareness on waste glass beverage bottle recycling.

2.6

In parallel, we have been encouraging different sectors and communities to take part in various voluntary schemes, which have in turn created the condition for a territory-wide, mandatory PRS on glass beverage bottles.

2.7

With the financial support from the Environment and Conservation Fund (“ECF”) and our technical advice, five schemes (details at [Annex B](#)) are in operation. These voluntary programmes contribute environmental benefits outlined in paragraph 1.5. In particular, they have helped enhance community awareness on glass recycling and educate the public to practise source separation. In addition, these programmes enable the setting up of 270 collection points 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). As the scope for reuse outlets is expanding, we are confident that we are ready to pursue a mandatory PRS on glass beverage bottles.





2.8

We do not propose to include other waste glass bottles as part of the PRS at this stage. From an environmental perspective, these bottles could be recycled if they are properly cleansed. However this may require the use of solvents to clean bottles that contain chemical substances such as cosmetics and medicine and other greasy liquids. The process itself could cause other environmental impacts. As regards bottles containing food/sauce, in addition to thorough cleansing, which may add costs to the treatment process, imposing a recycling fee on these common general household items may generate concerns in the community. After we have dealt with glass beverage bottles, we can then look into other types of glass containers. In the meantime, cleansed food/sauce bottles by the public are also welcome to be recycled, and we will promote the good habit of cleansing these containers before they are placed into recycle bins.

Consultation Question #1

Do you agree that we should now proceed to pursue a mandatory PRS on glass beverage bottles as a priority among different types of glass bottles, because this removes the largest number of glass bottles?



2.9

In parallel with this public consultation, we will continue to set up more collection points pending the mandatory PRS being put in place. Through the support of the Environmental Campaign Committee, we have been providing recycle bins to the private housing estates and buildings for glass bottles recycling. Interested parties can connect with suitable voluntary programmes to arrange collection services. We will continue to provide support to these voluntary programmes and assist in their expansion. We are also working with relevant government departments to implement glass bottle recycling at government venues and public places. For instance, with the assistance of Food and Environmental Hygiene Department, we will on a pilot basis set up some waste glass bottle collection bins at appropriate locations in some outlying islands, including Lamma and Cheung Chau, to encourage public participation in source separation of waste glass bottles. We will also work with the property management of public and private venues with dining facilities to provide provision of waste beverage bottle facilities and arrange for their recycling on a voluntary basis.





CHAPTER 3

YOUR SHARE OF ECO- RESPONSIBILITIES



3.1

PRS is a key policy tool for waste reduction, recovery and recycling identified in *A Policy Framework for the Management of Municipal Solid Waste* published in December 2005. A PRS organises stakeholders to share the responsibility (financial and/or physical) for the treatment or disposal of end-of-life products so as to minimise the environmental impact. This is a key strategy under this term of Government.



The Government will 3.2 continue to take the lead.

We propose to appoint a glass management contractor ("GMC") by way of open tender. This contractor will be tasked to collect waste glass beverage bottles and treat them to become reusable materials. With the GMC, we aim to —

- (a) *Achieve a high recovery rate:* International experience indicates that mandatory PRSs on glass beverage bottles could achieve a recovery rate ranging from 60% to close to 100%. As a start, we expect that about 70% of all waste glass beverage bottles generated, i.e. about 38,000 tonnes annually on the basis of 2011 figure, can be recovered.
- (b) *Provide a convenient collection system:* An annual tonnage of 38,000 means a daily throughput of over 100 tonnes. That exceeds the combined monthly capacity of all existing voluntary programmes. We need more easily accessible collection facilities, including recycle bins specifically designed for glass collection. The GMC is also responsible for operating several regional collection points to facilitate disposal in bulk by, say, the catering sector.
- (c) *Maintain high treatment standards:* The Government will set standards and promote professionalism, so that the handling of waste glass beverage bottles will be environmentally sound from collection to transportation to recycling facilities.



Do you know ?

Glass Recycle Bins

Given the brittle nature of glass bottles, some of the glass recycle bins in the city are by design different from the other conventional recycle bins used for paper, plastics and metal. Special features have been introduced such that the recycle bins are equipped with a baffle made of resilient materials under the circular opening on the top to reduce the dropping speed. There is also shock-absorption rubber inside the bins. These features can minimise the noise generated and avoid breakage. In addition the front-loading design helps reduce the need for manual lifting by cleaning workers in collecting the glass bottles, further safeguarding their occupational safety and health.

3.3

Furthermore, the Government will continue to promote green procurement to sustain and encourage demand for products that contain recycled glass. The Government will also play a key role in publicity and public education to promote the recycling of waste glass beverage bottles. Governments in many other jurisdictions like Japan, Taiwan and South Korea, have also adopted a similar approach in playing a key role for such initiative. Please see [Annex C](#).





We are a major commercial source of waste glass bottles and should play our part.

Mr. James Lu of the Hong Kong Hotels Association witnessed the launch of the Glass Container Recycling Programme for the Hotel Sector in November 2008, a major trade-led glass recycling programme in Hong Kong. By now, some 2,400 tonnes of glass bottles have been recovered for reuse in the production of eco-pavers.

Do you think this work?

3.4

All those who are engaged in businesses associated with glass-bottled beverages (e.g. suppliers and retailers) or waste glass beverage bottles (e.g. collectors and recyclers) will be affected by the mandatory PRS. There are several aspects to our proposed scheme.



3.5

Beverage suppliers to pay a recycling fee. We propose to collect the recycling fee from beverage suppliers, who are principally food distributors or importers registered under the Food Safety Ordinance (Cap 612). They will be required to submit data periodically to the Government on the amount of glass beverage bottles they have provided to retailers or consumers for local consumption and on that basis pay the recycling fee. Imposing the fee on suppliers is easier than on retailers because the former are already registered. There are some 1,700 companies registered for importing or distributing different kinds of beverages. Charging retailers would be much more difficult because of the sheer number of them. Surveys compiled by Census and Statistics Department show there are some 14,000 establishments in the retail business on food, alcohol, drinks & tobacco in 2010⁴. On top of that, nearly 6,000 premises having liquor licenses, and there are some 20,000 businesses engaged in the retail sales of beverages based on 2011 data.

Remark :

4. Source : Key Statistics on Business Performance and Operating Characteristics of the Import/Export, Wholesale and Retail Trades, and Accommodation and Food Services Sectors (2010 Edition), Census and Statistics Department.

Consultation Question #2

At present, a person who carries out a food importation or distribution business must be registered under the Food Safety Ordinance (Cap 612). Do you agree that the recycling fee for the PRS should be collected from those registered food importers and distributors who import or distribute glass-bottled beverages for local consumption? Who else would also be in the position to serve as the anchor point for the fee?

3.6

Beverage retailers to provide relevant recycling information.

Providing relevant information to consumers serves to promote source separation of waste for recycling. We propose to make the provision of information a statutory obligation so that beverage retailers, such as supermarkets and convenience stores, should take the initiative to advise consumers on the location of the nearby collection points. This can magnify the publicity effect and also enable beverage retailers to participate in the mandatory PRS as a key stakeholder in the supply chain of beverages.



Consultation Question #3

For ordinary consumers, do you find it helpful if a beverage retailer could advise you on how to participate in glass bottle recycling? For beverage retailers, are there any practical difficulties that would prevent you from providing recycling-related information to consumers?

3.7

Glass bottle recyclers to be licensed. Although glass is chemically non-hazardous, it is fragile and should be handled with care to avoid causing any accident particularly when glass bottles are stockpiled in large quantity. Moreover, automated recycling processes such as crushing and grinding might produce dust and noise which possibly disturb the neighbourhood. We propose that a new licensing requirement be introduced under the Waste Disposal Ordinance (Cap 354) so that glass bottle recyclers will adopt best practices and statutory standards in terms of environmental hygiene and occupational health. The licensing system will also facilitate the Government in monitoring the collection and recycling processes to ensure that the collected glass bottles are properly recycled to meet the relevant technical specifications.





Consultation Question #4

As a matter of principle, we should ensure that any end-of-life products under a PRS are efficiently collected for environmentally sound recycling processes to produce reusable materials. Do you agree that new licensing control for the processing of waste glass beverage bottles could contribute to the accomplishment of the said objective of the PRS?

Exemption applies to beverage suppliers with corporate recycling plans.

3.8

Notwithstanding paragraph 3.5, we are aware that some local beverage manufacturers have their own system to recover their glass bottles for rebottling. They normally work with restaurants and other retailers who receive and return the empty bottles to the manufacturers. The used bottles would then be cleaned and sterilised for reuse. The cycle may be repeated for as many as 30 times before bottles are sent for recycling.



3.9

Such reuse/recycling initiatives contribute positively to better resource management. We propose to exempt those suppliers who reuse and/or recycling glass bottles subject to periodic compliance audits. In such circumstances, the relevant beverage suppliers would not be liable to pay any recycling fee for their glass beverage bottles. This exemption is fair and in line with the “polluter pays” principle because instead of entering into the general waste stream, these glass beverage bottles are in fact recovered for reuse and should not be subject to the same fee as applied to other in single-use bottles.

Consultation Question #5

Do you agree that beverage suppliers with a satisfactory corporate reuse/recycling plan could be exempted from the payment of a recycling fee? Are you aware of any other stakeholders who should also be entitled to similar exemption?

Should we include a landfill
ban on glass beverage bottles?

3.10

Under the Product Eco-responsibility Ordinance (Cap 603), a mandatory PRS may include restrictions on the disposal of certain products at designated waste disposal facilities such as landfills and refuse transfer stations. This is to recognize that when there is a complete PRS solution for the proper collection and recycling of certain products, waste producers should practise source separation. A landfill ban will be implemented for WEEE.



3.11

We have considered whether a landfill ban can also be imposed on waste glass beverage bottles. A landfill ban will:

- (a) give a strong signal to the community that reducing pressure on landfill is one of the key objectives of this proposal;
- (b) reinforce the message that every waste producer has a share of eco-responsibility to practise source separation to divert glass beverage bottles from the waste stream to the alternative reuse outlets through the PRS; and
- (c) provide a tool for operators of waste reception facilities to refuse glass beverage bottles, especially those in bulk, from being accepted as waste to be landfilled.

3.12

Yet, we should also acknowledge the possible operational challenges and concerns. Such bottles are small in size and can be difficult to spot when mixed with ordinary trash. It would be operationally very difficult if not impossible to distinguish the targeted bottles from other bottles not included in the proposal at landfills or other waste reception facilities such as refuse collection points. Ensuring compliance at the waste disposal facilities will be a challenge.

3.13

International experience is split on whether a landfill ban has to be implemented with a mandatory PRS on glass. Such a ban is common in Europe but in Japan, Taiwan and South Korea, where a government-led PRS is implemented, a landfill ban is not in force. We would like to invite views from the community in this regard.

Consultation Question #6

Do you agree that a landfill ban on glass beverage bottles should be introduced? If yes, how it should be refined for better implementation?





CHAPTER 4

CREATION OF A CIRCULAR ECONOMY



4.1

Through the voluntary schemes mentioned in paragraph 2.7, 1,500 tonnes (i.e. around 3%) of waste glass beverage bottles were recovered out of 55,000 tonnes generated in 2011. International experience indicates that mandatory PRS on glass beverage bottles could achieve a recovery rate ranging from 60% to close to 100%. In those Asian jurisdictions described in [Annex C](#), at least 70% recovery has been achieved. As a start for Hong Kong, we estimate that 38,000 tonnes could be collected annually in Hong Kong upon successful implementation of our PRS initiative accounting for about 70% of the glass beverage bottles. This would require a sizable expansion of the current scale of recycling operations and would facilitate the creation of a circular economy.



I am bringing new life to waste glass
and in turn building
a greener Hong Kong.

Ms. April Lai runs the Green Glass Green project initiated by the Hong Kong Dumper Truck Drivers Association with funding support from the Environment and Conservation Fund. It operates at Wanchai and other locations at scheduled hours. Every time she is asked to comment on her programme, she says it is a tough job but she wants to do more because turning waste into resource is practical and leads to a greener Hong Kong.





Glass bottles are now recovered for local manufacturing of eco-pavers.

4.2

At present, most of the waste glass bottles recovered for recycling was supplied to two local manufacturers of eco-pavers. Increasingly more of the paving blocks used in public works contain recycled glass. This enables more glass to be recycled rather than landfilled. Research also suggests that eco-pavers have positive characteristics over conventional paving blocks. They are lighter in weight, lower in water absorption value and enhanced surface appearance. Nowadays, our eco-paver technology is quite advanced, featuring a double layer structure with further enhanced surface appearance of the upper layer and addition of titanium dioxide which can help removing one of the air pollutants, nitrogen oxides (or “NOx”), in the air.

New applications of recycled glass in construction works are being explored.

4.3

A single application in the production of eco-pavers could not provide an adequate outlet to absorb all waste glass recovered under a territory-wide PRS. The Government has been actively exploring other feasible applications in construction works. We have identified a number of them. For instance, glass sand from crushed bottles has similar technical performance of recycled aggregates and could potentially be suitable for use in site formation, earth filling and reclamation works. Glass cullet in suitable size may be used as backfill or sub-base in roadway construction works. Besides eco-pavers, recycled glass cullet can also be used for production of partition wall blocks which may have a great potential market.

4.4

With the coordination of Development Bureau and EPD, a number of government departments are working together to explore and promote the use of materials with recycled glass in construction works. [Annex D](#) summarizes the potential applications for the reuse of waste glass materials that are under close examination, including some that may be implemented in the private sector. As these potential applications become mature, we will be able to further diversify the potential outlets for recycled glass to ensure the adequacy of the PRS as a local solution for the long term.

Our proposal is cost effective
as compared to alternatives.

4.5

In Chapter 3, we proposed a pre-paid recycling fee be imposed on beverage suppliers. It is premature to prescribe any specific level for the ultimate recycling fee at the consultation stage; overseas experience suggests an indicative figure of around \$1 per litre⁵. Under this scale, a normal-sized bottle of red wine would incur a recycling fee of around \$0.75. We will determine the level of the recycling fee after completing the open tender for the GMC contract taking into account the “polluter pays” principle.



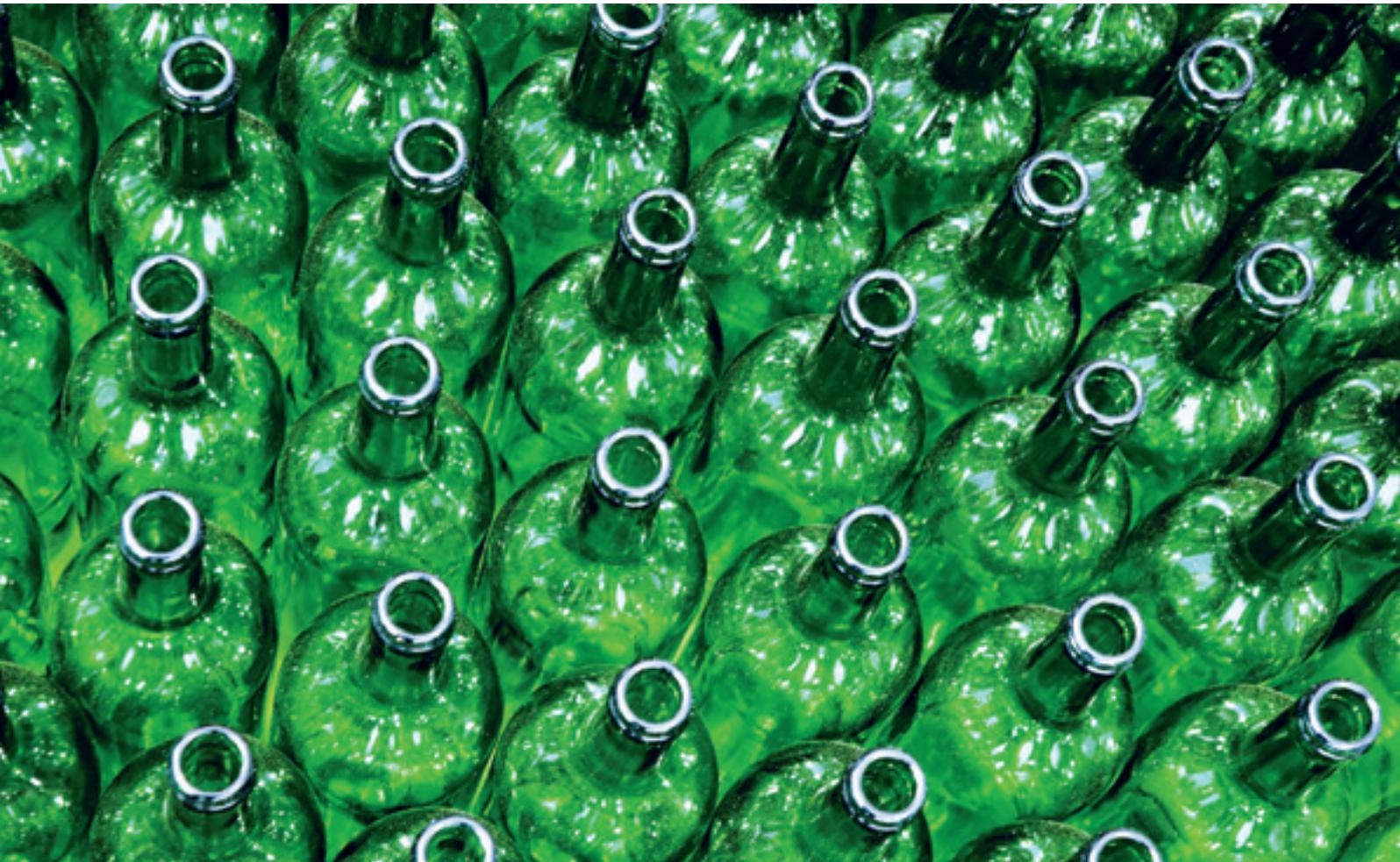
Remark :

5. In the three Asian jurisdictions referred to in [Annex C](#) (i.e. Japan, Taiwan and South Korea), the recycling fee is up to \$0.4 per litre covering mainly the treatment cost.



4.6

We estimate that about 70% of the waste glass beverage bottles generated locally in Hong Kong can be recovered and turned into reusable resources. Our environment will benefit with a reduced demand for non-renewable resources including landfill space and other natural resources such as river sand. This would also help promote glass recycling as green industry as well as create green jobs.



4.7

Apart from our proposal, we are aware of other approaches adopted in other international experience, for instance —

- (a) a “manufacturer-led” approach adopted in Germany, Sweden and California of the United States, with beverage manufacturers taking up certain statutory responsibility to arrange the collection and recycling waste glass beverage bottles up to a prescribed target set by the government; or
- (b) a non-statutory approach as in Australia and Singapore where beverage manufacturers have entered into mutual agreements with the government for the former to undertake efforts to minimise the generation of waste glass beverage bottles and to achieve a certain target recovery rate.

We believe our proposed mandatory approach is designed to suit local circumstances, where most of our beverages are imported, making manufacturer-led schemes unsuitable. We also wish to go beyond non-statutory approaches that merely increase the recovery rate by developing a more comprehensive whole-cycle approach.





CHAPTER  5

A BROADER PICTURE : BEVERAGE CONTAINERS IN GENERAL



5.1

Beverages available in Hong Kong are also commonly packed in aluminium cans, paper cartons and plastics. Whereas PRS initiatives seek primarily to ensure the proper management of spent products that do not have a ready market, we have considered the merits of extending the PRS on glass beverage bottles as discussed in the preceding chapters to other types of beverage containers.

There are non-PRS options for other types of beverage containers.

5.2

Aluminium cans are rarely found at our landfills in Hong Kong. The vibrant private market enables the recovery of waste aluminium cans at good prices which compensates the cost in the collection process. A mandatory PRS is unlikely to create further major environmental benefits for the recycling of waste aluminium cans.

5.3

On the other hand, we generate about 80 tonnes of beverage carton boxes (principally Tetra Pak® packaging) everyday. The volume is comparatively small as compared to the 150 tpd of landfilled glass beverage bottles. Tetra Pak® is a type of composite packaging material comprising (i) an outer layer of waxed cardboard, (ii) an inner layer of polyethylene, (iii) a thin layer of foil coated internally where the package is designed for store food without refrigeration, and (iv) a plastic pouring spout. Internationally, there are Tetra Pak® processing plants seeking to recover the paper and metal content but so far there is none in Hong Kong and we do not currently separate carton boxes at source for recycling.





We have a good start in local plastic resource recycling but more have to be done.

Ms. Florence Wong manages the Plastic Resources Recycling Centre as a social enterprise operated by Yan Oi Tong with ECF funding at the EcoPark. It is the only plastic recycling plant in Hong Kong engaging actively in recycling of local plastic waste as well as community education and promotion on recovery and recycling. It requires more support from our society to reduce the waste plastic disposal at our landfills.

5.4

For plastic beverage bottles, they are mostly made of polyethylene terephthalate (i.e. "PET"). Some private recyclers now collect waste plastic beverage bottles, as they do for waste paper and waste metal. The majority of them are exported as secondary raw materials after simple sorting and cleansing. In 2011, some 100 tpd of PET materials were still landfilled⁶. Our analysis is that —





- (a) PET materials have good commercial value if they are sorted correctly and do not contain contaminants. As an illustration, the spot price for shredded PET scrap ranges from \$4,000 to \$5,000 per tonne respectively as at August 2012 depending on its purity and colour. This explains why for-profit private recyclers are taking the lead in the recycling of PET materials (similar to that of aluminium cans). Indeed, the same is true in Hong Kong with much of the recovered waste plastics exported to Mainland China as reusable resources.
- (b) Mainland China⁷ has yet to pass any legislation to mandate the recycling of PET bottles. In some European jurisdictions with a “manufacture-led” PRS, beverage manufacturers have to collect and recycle plastic beverage bottles. But a similar approach is not adopted in Mainland China where plastic bottle recycling is principally coordinated by for-profit private recyclers in the market.

Remark :

6. We do not have further breakdown on the tonnage for PET beverage bottles.

7. With our city being an international free port, the regulatory landscape in the neighbouring region is a key factor to consider whether or not mandatory PRS initiatives should be introduced for these beverage containers. Financed with a recycling fee imposed on beverage containers generated locally in Hong Kong, these PRS initiatives could not viably handle recyclables generated from outside Hong Kong. To this end, developments in Mainland China are of notable relevance given the vast volume and ease of cross-boundary trades.





5.5

With ECF funding, a non-profit making organisation is running a plastic waste recycling centre at EcoPark Phase Two. So far this approach has worked to promote source separation of waste plastics for local recycling while respecting the market operation of collection of the bulk of waste plastic bottles for recycling outside Hong Kong.



5.6

To sum up, the landfill pressure from glass beverage bottles (around 150 tpd) is more serious and urgent when compared to beverage containers made of carton box (80 tpd) or plastic (up to 100 tpd). Thus, we will focus our efforts at this stage on glass beverage bottle recycling. That said, with the implementation of the mandatory PRS, there might be switching to non-glass packing alternatives. We will review the case for introducing a PRS on beverage plastic bottles and Tetra Pak® packaging in the light of developments both locally on other PRSs and in our neighbouring cities.





CHAPTER  6

WE LOOK FORWARD TO YOUR VIEWS





I am glad to see our trainees finding their way to contribute to the better environment of Hong Kong.

Mr. Yim Yat-Keung oversees the Glass Bottle Recycling Campaign, organised by Hong Chi Association with the generous funding support from the Hong Kong Jockey Club Charities Trust. Instead of merely recovering waste glass bottles, the programme also provides training opportunities to trainees with intellectual disabilities who help in bottle collection and certain pre-treatment handling such as sorting and cleansing. This popular programme has now grown to serve some 160 collection points throughout the territory.



6.1

In this Consultation Document:

- (a) we have reviewed our past efforts in recycling waste glass beverage bottles and proposed to step up by introducing mandatory PRS;
- (b) we have recommended a Government-led approach for the mandatory PRS, and how various stakeholders may contribute to a local solution for the proper management of waste glass beverage bottles;
- (c) beverage retailers will be required to provide recycling-related information to consumer;
- (d) the Government will hire a management contractor to undertake the collection and recycling of waste glass beverage bottles recovered under the PRS;
- (e) recyclers involved will have to obtain a licence to ensure satisfactory service standards and professionalism; and
- (f) a recycling fee will be collected from beverage suppliers to cover the PRS costs.

We also seek the community's views on the inclusion of a landfill ban in our proposal.

6.2

We welcome your views on our proposal for the new PRS. More specifically —

- (a) **Consultation Question #1:** Do you agree that we should now proceed to pursue a mandatory PRS on glass beverage bottles as a priority among different types of glass bottles, because this removes the largest number of glass bottles? [cf. Paragraph 2.8]
- (b) **Consultation Question #2:** At present, a person who carries out a food importation or distribution business must be registered under the Food Safety Ordinance (Cap 612). Do you agree that the recycling fee for the PRS should be collected from those registered food importers and distributors who import or distribute glass-bottled beverages for local consumption? Who else would also be in the position to serve as the anchor point for the fee? [cf. Paragraph 3.5]
- (c) **Consultation Question #3:** For ordinary consumers, do you find it helpful if a beverage retailer could advise you on how to participate in glass bottle recycling? For beverage retailers, are there any practical difficulties that would prevent you from providing recycling-related information to consumers? [cf. Paragraph 3.6]
- (d) **Consultation Question #4:** As a matter of principle, we should ensure that any end-of-life products under a PRS are efficiently collected for environmentally sound recycling processes to produce reusable materials. Do you agree that new licensing control for the processing of waste glass beverage bottles could contribute to the accomplishment of the said objective of the PRS? [cf. Paragraph 3.7]
- (e) **Consultation Question #5:** Do you agree that beverage suppliers with a satisfactory corporate reuse/recycling plan could be exempted from the payment of a recycling fee? Are you aware of any other stakeholders who should also be entitled to similar exemption? [cf. Paragraph 3.9]
- (f) **Consultation Question #6:** Do you agree that a landfill ban on glass beverage bottles should be introduced? If yes, how it should be refined for better implementation? [cf. Paragraph 3.13]



How to respond?

6.3

Please send us your views and comments by email, post, or facsimile on or before **6 May 2013** to —

By Email: glass_prs@epd.gov.hk

By Post: Environmental Protection Department
Waste Management Policy Group
Room 4522, 45th floor, Revenue Tower
5 Gloucester Road
Hong Kong

By Facsimile: 2318 1877

If returning by post, you may consider using the postage paid Response Form at [Annex E](#).

Please note.

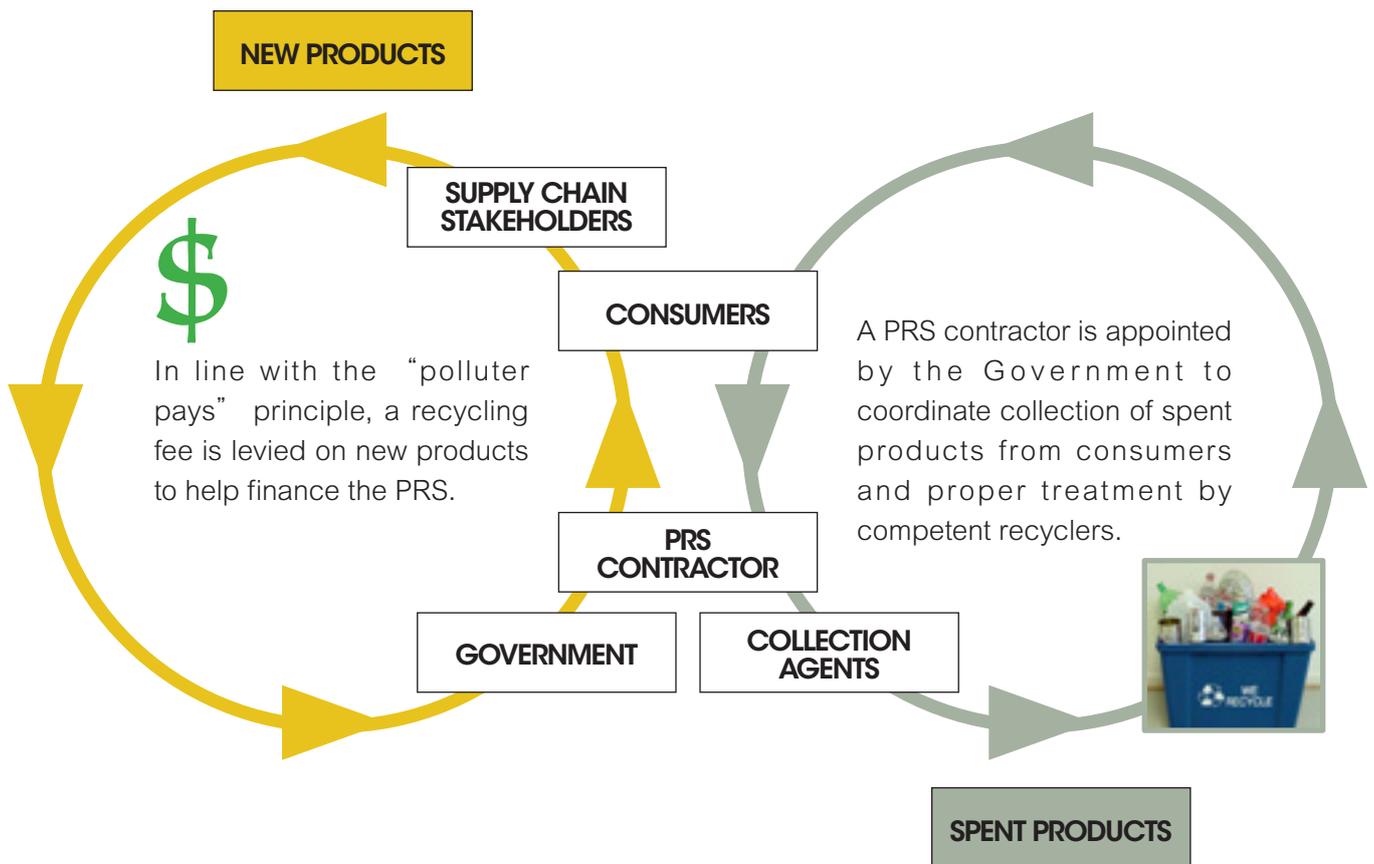
6.4

Government may wish, either in discussion with others or in any subsequent report, whether privately or publicly, to be able to refer to and attribute views submitted in response to this Consultation Document. Any request to treat all or part of a response in confidence will be respected, but if no such request is made, it will be assumed that the response is not intended to be confidential.



Annex A

Producer Responsibility Scheme : Our Local Model



Annex B

Glass Recycling Programmes supported by the Government

- **“Glass Container Recycling Programme for the Hotel Sector”**, organised by the Hong Kong Hotels Association

Managed by the Hong Kong Hotels Association with technical support from EPD, the programme was first rolled out in November 2008 to help the hotel sector to reduce their waste and ensure their glass bottles are handled in an environmentally sound manner. In 2012-13, a total of 27 hotels have participated and they jointly finance the programme. As at end 2012, over 2,400 tonnes of waste glass beverage bottles (cumulative) had been recovered under this programme for production of eco-pavers.

- **“Glass Bottle Recycling Campaign”** organised by Hong Chi Association

Hong Chi Association started this programme in April 2010 with the generous funding support from the Hong Kong Jockey Club Charities Trust. EPD has been offering professional advice. The programme comprises both environmental protection and social service elements by engaging trainees with intellectual disabilities in suitable recycling operations. Through continuous expansion, the programme is now serving 48 private housing estates, 15 commercial organisations, 15 NGOs in addition to the 26 collection points in Hong Chi’s service centres. As at end 2012, over 1,000 tonnes of glass bottles (cumulative) had been collected for recycling under the programme.

- **“Green Glass Green”** organised by the Hong Kong Dumper Truck Drivers Association

Green Glass Green, launched in June 2010, is a glass recycling programme organised by the Hong Kong Dumper Truck Drivers Association with funding support from the ECF. The programme now covers mainly the bar and restaurants areas in Wanchai and SoHo districts as well as a number of collection points set up with private clubs, housing estates and NGOs at some public accessible locations. As at end 2012, over 900 tonnes of waste glass (cumulative) had been collected for recycling into glass sand to produce eco-pavers.

■ **“Pilot Programme on Source Separation of Glass Bottles”** at public housing estates in East Kowloon

In order to test out the logistics arrangement for recycling of glass bottles in residential settings, EPD joined hands with the Hong Kong Housing Authority (“HKHA”) to launch this pilot programme in December 2010. As it first started, it covered six HKHA-managed public rental housing (“PRH”) estates in East Kowloon. By now, it has been extended to all PRH estates in the region serving a population of 340,000 people or 125,000 households. As at end 2012, over 170 tonnes of glass bottles (cumulative) had been collected for recycling.

■ **“Shatin Glorious Glasses”** organised by the Shatin Inhabitants Association

With funding supporting from the ECF, Shatin Inhabitants Association rolled out the “Glorious Glasses in Shatin” in February 2012. This comparatively new programme serves mainly residential estates, schools and some restaurants in Shatin district. As at end 2012, over 45 tonnes of waste glass (cumulative) had been collected for production of eco-pavers.

Note:

1. In addition to the above, there are other community-based initiatives promoting glass recycling. For instance, in support of the Community Recycling Booth set up by EPD on Lamma every Friday and Saturday’s afternoons to promote recycling, Living Lamma initiated a voluntary recycling programme in collaboration with the restaurants and bars on the island to collect their bottles and deliver the Community Recycling Booth for recycling since March 2012. As at the end of 2012, over 50 tonnes of glass bottles (cumulative) had been collected for production of eco-pavers.
2. As at end 2012, there is one voluntary glass recycling programme having obtained in-principle support from the ECF but has yet to commence actual operation.

Annex C

Overseas Experience in Asia in Promoting Glass Beverage Bottle Recycling through a Government-led Approach

	Jurisdiction	Year of Implementation	Collection and Processing	Recovery Rate	Remarks
1	Japan	1997	Manufacturers to meet recycling targets and properly recycle recovered glass beverage bottles on their own OR discharge such obligations by paying a fee to a fund which supports processing operations	~95% (as at 2006)	
2	Taiwan	1997	Manufacturers to pay a recycling fee into a government fund which supports processing operations as well as other education projects	~84% (as at 2008)	
3	South Korea	2002	Manufacturers to meet certain recycling targets on their own OR discharge such obligations by paying a fee to a fund which supports processing operations	~70% (as at 2006)	Manufacturers to produce easy-to-recycle products as a mandatory requirement

Annex D

Potential Reuse of Waste Glass Materials¹ in the Construction Sector

1.	Eco-Paver ⁽²⁾⁽³⁾	To replace river sand and aggregates in the production of paving blocks
2.	Eco-Partition Blocks ⁽³⁾	To replace aggregates in the production of partition blocks
3.	Fill Material	To be used as filled materials in site formation, backfilling and reclamation works
4.	Glassphalt ⁽⁴⁾	To replace natural aggregate in the production of bituminous materials for road paving
5.	Blanket Drainage Layer ⁽⁴⁾	To replace natural or recycled aggregate for constructing blanket drainage layers in landfills to facilitate the collection of leachate
6.	Cement Mortar ⁽³⁾	To replace river sand in the production of cement mortar for building and refurbishment works

Note:

1. After suitable processing to comply with relevant technical specifications.
2. The use of glass cullet in the production of eco-pavers for use in construction works has attained an implementation stage.
3. There is potential for use in private-sector construction works.
4. Subject to further testing for use in public works.

Annex E

Response Form

Part I (Note)

This is a corporate response (representing the views of a group or an organisation),
 private response (representing the views of an individual),
by _____
(name of person or organisation)
at _____ And _____
(telephone) (email)

Note:
The Government may wish, either in discussion with others or in any subsequent report, whether privately or publicly, to be able to refer to and attribute views submitted in this response. Any request to treat all or part of a response in confidence will be respected, but if no such request is made, it will be assumed that the response is not intended to be confidential.

Part II

Specific Questions for Consultation

Q1 : Do you agree that we should now proceed to pursue a mandatory PRS on glass beverage bottles as a priority among different types of glass bottles, because this removes the largest number of glass bottles?
For glass beverage bottles to be covered under the mandatory PRS now:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

For glass food/sauce bottles to be covered under the mandatory PRS in a future phase:

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Views: _____

Q2 : At present, a person who carries out a food importation or distribution business must be registered under the Food Safety Ordinance (Cap 612). Do you agree that the recycling fee for the PRS should be collected from those registered food importers and distributors who import or distribute glass-bottled beverages for local consumption? Who else would also be in the position to serve as the anchor point for the fee?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

- I am/We are NOT aware of any other stakeholders who should also act as the fee collecting agent.
 I/We consider that the stakeholders as elaborated below should also act as the fee collecting agent.

Views: _____

Q3 : For ordinary consumers, do you find it helpful if a beverage retailer could advise you on how to participate in glass bottle recycling? For beverage retailers, are there any practical difficulties that would prevent you from providing recycling-related information to consumers?
For ordinary consumers:

Not helpful at all	Not very helpful	Neutral	Helpful	Very helpful

For beverage retailers:

- I/We have NO practical difficulties to provide recycling-related information to consumers upon request.
 I/We have practical difficulties to provide recycling-related information to consumers upon request, as elaborated below.

Views: _____

Q4 : As a matter of principle, we should ensure that any end-of-life products under a PRS are efficiently collected for environmentally sound recycling processes to produce reusable materials. Do you agree that new licensing control for the processing of waste glass beverage bottles could contribute to the accomplishment of the said objective of the PRS?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Views: _____

Q5 : Do you agree that beverage suppliers with a satisfactory corporate reuse / recycling plan could be exempted from the payment of a recycling fee? Are you aware of any other stakeholders who should also be entitled to similar exemption?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

- I am/We are NOT aware of any other stakeholders who should also be entitled to exemption from the payment of a recycling fee.
 I/We consider that the stakeholders as elaborated below should also be entitled to exemption from the payment of a recycling fee.

Views: _____

Q6 : Do you agree that a landfill ban on glass beverage bottles should be introduced? If yes, how it should be refined for better implementation?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Views: _____

Part III

Other comments



Please fold here. 請在此對摺

飲品玻璃樽生產者責任計劃公眾諮詢
回應表格

Public Consultation on
a New Producer Responsibility Scheme on Glass Beverage Bottles
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BUSINESS REPLY SERVICE LICENCE NO.
商業回郵牌號：7590

Environmental Protection Department
Waste Management Policy Division

Room 4522, 45th floor, Revenue Tower
5 Gloucester Road
Hong Kong



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