Enquiry Question:  *Should waste charging be adopted to alleviate the solid waste problem in Hong Kong?*

Year of Examination: ______________________

Name of Student: ______________________

Class/ Group: ______________________

Class Number: ______________________

Number of words in the report: ______ 2800 ______

Notes:

1. Written reports should not exceed 4000 words. The reading time for non-written reports should not exceed 20 minutes and the short written texts accompanying non-written reports should not exceed 1000 words. The word count for written reports and the short written texts does not include the covering page, the table of contents, titles, graphs, tables, captions and headings of photos, punctuation marks, footnotes, endnotes, references, bibliography and appendices.

2. Candidates are responsible for counting the number of words in their reports and the short written texts and indicating it accurately on this covering page.

3. If the Independent Enquiry Study Report of a student is selected for review by the School-Based Assessment System, the school should ensure that the student’s name, class/ group and class number have been deleted from the report before submitting it to the Hong Kong Examinations and Assessment Authority. Schools should also ensure that the identities of both the schools and students are not disclosed in the reports. For non-written reports, the identities of the students and schools, including the appearance of the students, should be deleted.

Sample 1

This is a sample of Independent Enquiry Study Report for illustrating the structured Independent Enquiry Study for Medium Term Review.
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A. Problem Definition

- What is the contemporary issue for enquiry you have chosen?
- What is the significance of the contemporary issue for enquiry on society/ why is it of interest to you?
- How do you justify the significance of the issue/ point of interest for enquiry (e.g. the reasons why it is worthwhile to conduct an enquiry on the issue)?
- What are you going to enquire about and what is the focus of your enquiry?
- How do you define the scope of the issue enquiry?
- What is your enquiry question at last? What is/ are your focus question(s)

In January 2012, the Hong Kong Government conducted a public consultation on the charging of municipal solid waste. In the consultation document, several waste charging mechanisms and experiences of overseas were put forward to gauge public opinions.

This report aims at analysing the appropriateness of waste charging, in terms of its principles and the effectiveness of various charging mechanisms suggested in the consultation document, to alleviate the solid waste problem with reference to the situation in Hong Kong.

Focus questions

- Can waste charging alleviate the solid waste problem in Hong Kong?
- Which of the charging mechanisms is effective in Hong Kong?

The municipal solid waste problem has been pressing in Hong Kong. The daily quantity of municipal solid waste being dumped into Hong Kong’s three strategic landfills “stands at 9 100 tonnes, sufficient to fill up three Olympic-sized swimming pools.”¹

The Environment Bureau projected that the three existing landfills will be exhausted

by 2020 if the amount of waste dumped in the landfills continues to rise at current levels. Table 1 indicated that although a large proportion of waste (nearly half) is recovered, the amount of waste dumped in the landfill remained quite the same in the past decade and was rising slightly from 2010 to 2011. In other words, the landfill space will be exhausted in 7 years’ time or earlier with the growth of population and the existing rate of waste generation.

With the limited space and high density of city development, it is almost impossible to identify new sites as landfills. Also, there has been strong resistance of local residents against the extension of the existing landfills and the establishment of new landfills and other waste treatment facilities, such as incinerators in their vicinity. The uproar against the extension of the landfill in Tseung Kwan O was a case of this.

To tackle the solid waste problem in Hong Kong at source, some new measures are necessary. However, is waste charging an appropriate way to alleviate the waste problem in Hong Kong? Which charging mechanism will be more feasible and effective?

Table 1: Municipal solid waste disposed of at landfills and recovered

<table>
<thead>
<tr>
<th>Year</th>
<th>Municipal solid waste disposed of at the landfills (tonnes / day)</th>
<th>Municipal solid waste recovered (tonnes / day)</th>
<th>% of recovered waste recycled locally</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>9 441</td>
<td>6561</td>
<td>9</td>
</tr>
<tr>
<td>2004</td>
<td>9 288</td>
<td>6192</td>
<td>9</td>
</tr>
<tr>
<td>2005</td>
<td>9 377</td>
<td>7074</td>
<td>6</td>
</tr>
<tr>
<td>2006</td>
<td>9 279</td>
<td>7592</td>
<td>4</td>
</tr>
<tr>
<td>2007</td>
<td>9 184</td>
<td>7823</td>
<td>1</td>
</tr>
<tr>
<td>2008</td>
<td>9 021</td>
<td>8667</td>
<td>1</td>
</tr>
<tr>
<td>2009</td>
<td>8 963</td>
<td>8612</td>
<td>1</td>
</tr>
<tr>
<td>2010</td>
<td>9 114</td>
<td>9874</td>
<td>1</td>
</tr>
<tr>
<td>2011</td>
<td>8 996</td>
<td>8304</td>
<td>1</td>
</tr>
</tbody>
</table>

Data from the Environmental Protection Department Homepage
B. Relevant Concepts and Knowledge/ Facts/ Data

- What are the key knowledge and concepts that you think are significant for understanding the issues in your enquiry?
- What are the basic and necessary knowledge/ facts/ data that facilitate your understanding of the issue?
- How do you gather the facts/ data for your enquiry?
- How would you apply the concepts and knowledge/ facts/ data to your issue enquiry?

- **Waste charging**
  A charge is incurred on the disposal of waste. The objective of waste charging is “to create an economic incentive to achieve waste reduction”\(^3\). Its principles and possible charging mechanisms are to be analysed to determine its appropriateness in Hong Kong.

- **Polluter-pays policy and economic incentives**
  Under the polluter-pays policy, “those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment”.\(^4\) Economic incentives are “costs or benefits that motivate a decision or action by consumers, businesses, or other participants in the economy.”\(^5\) These are the principles underlying waste charging and the appropriateness of which for tackling the solid waste problem will be analysed. Conflicts arise in society when stakeholders do not unanimously support these principles, which incur financial impacts.

- **Municipal solid waste problem**
  This refers to the problems stemming from the generation, disposal and treatment of waste from domestic, industrial and commercial sources. The causes and extent of the problem have to be identified in order to assess whether waste charging will be an appropriate measure to tackle it.

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\(^4\) The Guardian, “The Ultimate Climate Change FAQ”.

\(^5\) Economic Glossary website
• **Quality of life**
  If the treatment and disposal of waste is not handled properly, the environmental quality will be undermined. The extension of the landfills or the establishment of waste treatment facilities poses negative impact on the quality of life of nearby residents.

• **Waste management**
  It refers to the collection, transportation, and disposal of waste. Waste charging is considered by the government as part of the waste management strategy. Hence, this concept will be used in the discussion of whether waste charging is an appropriate approach of waste management.

• **Appropriateness of a measure**
  The appropriateness in this case could be assessed with reference to the possibility of reducing the waste generation, alleviating the pressure on landfills and the acceptance among the general public, which determines the feasibility and the possible behavioural changes and suitability of the various charging mechanisms in the situation of Hong Kong.

In response to the enquiry question, views from different stakeholders and pros and cons of waste charging, as shown in previous researches and interviews by the media, as well as information on the waste problems and experiences in other countries will be analysed.

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*BusinessDictionary.com*
C. In-depth Explanation of the Issue

How do you explain, analyse or interpret the following related items in the process of enquiry by applying relevant concepts and knowledge/facts/data?

- factors bringing about the issue
- impacts brought by the issue / suggestions for the issue
- majority views/ disagreements/ diversity/ conflicts or perspectives for looking at the issue

In January, 2012, the government issued a consultation document, *Strengthening Waste Reduction: Is Waste Charging an Option? Public Consultation*. The government suggested waste charging as a means to reduce waste in Hong Kong. Three reasons were put forward in support of the implementation of waste charging: (1) “Reducing Waste Generation at Source”; (2) “Increasing Waste Recovery Rate” and (3) “Fostering Behavioural Changes”.

The key stakeholders involved in the issue are the Hong Kong government, green groups, all households in Hong Kong, the commercial and industrial sectors.

The controversial nature of the issue can be evident from the surveys conducted by the University of Hong Kong and the Chinese University of Hong Kong in 2012.

Table 2: Some data from the survey by the University of Hong Kong\(^8\)

<table>
<thead>
<tr>
<th>Respondents’ view on adopting polluter-pays principle in waste charging</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>51.7%</td>
</tr>
<tr>
<td>Disagree</td>
<td>26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respondents’ view on the waste charge of $35-45 per household per month</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate</td>
<td>50%</td>
</tr>
<tr>
<td>Too much</td>
<td>33%</td>
</tr>
</tbody>
</table>

Table 3: Some data from the survey by the Chinese University of Hong Kong\(^9\)


\(^8\) Data from The Public Opinion Programme, The University of Hong Kong

\(^9\) Data from 中大香港亞太研究所公布市民對固體垃圾收費態度意見調查結果摘要，2012年1月31日
Respondents’ view on adopting waste charging to reduce solid waste

<table>
<thead>
<tr>
<th>View</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree and strongly agree</td>
<td>58.7%</td>
</tr>
<tr>
<td>Disagree and strongly disagree</td>
<td>36.9%</td>
</tr>
</tbody>
</table>

The charging mechanism that they agree with

<table>
<thead>
<tr>
<th>Charging Mechanism</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Quantity-based” charging by using designated rubbish bins</td>
<td>33.8%</td>
</tr>
<tr>
<td>“Partial-charging” on some sectors first, e.g., the commercial and industrial firms</td>
<td>26.3%</td>
</tr>
<tr>
<td>“Proxy-system” e.g., charging according to water consumption</td>
<td>6.9%</td>
</tr>
<tr>
<td>“Fixed charge system” in which each waste producer within the same category pays an identical rate</td>
<td>10.5%</td>
</tr>
<tr>
<td>Others</td>
<td>1.8%</td>
</tr>
<tr>
<td>Charging should not be introduced</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

From both surveys, although slightly more than half of the respondents agreed with the adoption of the principle of waste charging, about one-third disagreed or strongly disagreed with it. In other words, there is no overwhelming agreement to the introduction of this measure. Similar situation is found with the charging amount whereas the public’s views are more diverse in concern with the charging approaches, as shown in Tables 2 and 3.

In relation to the introduction of waste charging in Hong Kong, conflicts may arise firstly, due to different perceptions of the share of responsibility of waste management among different sectors in society and the government. From Tables 2 and 3, about one-third of the respondents disagreed with the polluter-pays principle and 26.3% preferred “partial charging” for the commercial and industrial sectors, indicating the unwillingness for some households to take up their responsibility of the waste they generate. On the other hand, some people in the business sector may believe that the consumers are producing the waste. For example, a website\(^\text{10}\) has quoted Simon Wong Ka-wo, chairman of the Hong Kong Food Council, refuting the responsibility of restaurants, “it’s the customers, not the restaurants, who produce food waste. It’s not fair to charge the restaurants”.

Some people may also believe that they have paid the garbage collection fee already. For example, the website has interviewed a cleaner who said “My property management company already includes garbage collection fees in the property management fee. Why should I pay more for my waste?”

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\(^{10}\) Timeout Hong Kong
In contrast, the government puts forward the waste charging scheme as an incentive for the public, who are producing the waste, to take up their own responsibility and reduce waste. The former Secretary for the Environment said in the consultation document, “The waste management problem facing us is imminent. Together as a community, Hong Kong people need to take action. It starts with changing our habit”.\textsuperscript{11}

Conflicts in society may also arise in the discussion of the amount to be charged and the charging mechanism as stakeholders have different concerns and interests. As shown in Tables 2 and 3, people are not willing to pay much and not an overwhelming majority agree with the adoption of waste charging. However, as the green groups are concerning more about the reduction of waste generation so as to alleviate the environmental problems with waste treatment, they are suggesting a higher charge as an economic incentive. The Friends of the Earth believes that 60 cents, which is the average charge people were willing to pay as found from a survey, “would be too low to encourage waste reduction”.\textsuperscript{12}

Dispute in relation to the charging mechanism may also arise due to the different financial impacts on stakeholders. The consultation suggested 3 approaches to waste charging: quantity-based system (“…charge is assessed on the basis of waste quantity”\textsuperscript{13}), proxy system (“links the charge to an indirect indicator of waste generation”, e.g., water) and fixed charge (“Each waste producer within the same category (e.g. residents of the same district) pays an identical rate). Some stakeholders, like the green groups, advocate the quantity-based system. However, some people worry about the inconvenience caused by measuring the quantity. Though proxy system and fixed charge are easier for implementation, some citizens, not only the green groups, deem it unfair and will not provide incentive for those disposing a larger quantity of waste to change their habit.

As the green groups value the environment more, they will advocate a higher charge and faster implementation of the charging scheme to achieve waste reduction. On the contrary, the government has the responsibility to oversee the economic, social development and the preservation of the environment. They would like to conduct

\textsuperscript{12} South China Morning Post, “Public support waste disposal charges”, 15 August, 2012.
more rounds of consultation in order to reach consensus among the citizens, which may take years. In other words, the society may be divided over the timeline and the pace of implementation. Also, the final charging scheme, which gains the acceptance of most citizens, may be too low to impart much economic incentive on waste reduction.

If waste charging is implemented, there may be physical conflicts and verbal disputes between the officials and those who are caught fly-tipping.
D. Judgment and Justification

- How do you respond to your enquiry questions from multiple perspectives so as to provide evidential support for your arguments?
- What are your major arguments and evidential support in response to the enquiry question, by applying relevant concepts and knowledge/facts/data?
- What is/are your views/stance/decision/choice/value judgement/evaluation in the issue enquiry?

I think that waste charging should be adopted to alleviate the solid waste problem in Hong Kong.

Can waste charging alleviate the solid waste problem in Hong Kong? This charging scheme will be able to tackle the waste problem at source and provide an incentive for people in Hong Kong to reduce waste. Firstly, from the survey by the University of Hong Kong\textsuperscript{14}, though just about half agreed with the polluter-pays principle, the majority (62\%) of the respondents will sort waste for recycling after the implementation of the waste charges. In other words, people who do not agree with the polluter-pays principle and are not willing to pay (one-third of the respondents in Tables 2 and 3) may also be forced to reduce waste, for example, to sort waste before disposal. In order to reduce the expenditure on waste disposal, the majority of people will sort waste for recycling. Waste charging will serve the purpose of providing an economic incentive and the amount of waste to be disposed of at the landfills will be reduced.

Table 4: Per Capita Domestic Waste Generation and Disposal in Selected Cities\textsuperscript{15}

<table>
<thead>
<tr>
<th>City</th>
<th>Daily Generation (kg/person/day)</th>
<th>City</th>
<th>Daily Disposal (kg/person/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taipei City</td>
<td>0.88</td>
<td>Taipei City</td>
<td>0.41</td>
</tr>
<tr>
<td>Seoul</td>
<td>1.08</td>
<td>Seoul</td>
<td>0.35</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>1.45</td>
<td>Hong Kong</td>
<td>0.87</td>
</tr>
<tr>
<td>London</td>
<td>1.45</td>
<td>London</td>
<td>1.04</td>
</tr>
</tbody>
</table>

\textsuperscript{14} The Public Opinion Programme, The University of Hong Kong
The experiences in Taipei City and Seoul indicate the positive effects of waste charging. From Table 4, both the per Capita daily generation and disposal of waste are lower than that in Hong Kong and London, where waste charging is not implemented. Both figures in Taipei are just half of that in Hong Kong. The relatively small amount of waste generation in Taipei City and Seoul indicates that waste charging is a means to tackle the waste problem at source. If it is implemented in Hong Kong, people may be deterred from generating too much waste with the aim to keep down the expenditure on waste charges. This provides an incentive for them to change their habits. For instance, people may purchase goods with less packaging, reduce food wastage, sorting out recyclables or reusing the products before dumping.

If the amount of waste to be disposed of at the landfill is reduced, the landfills will not be exhausted so quickly.\textsuperscript{16} There will not be a pressing need for the extension of the existing landfills and the environmental problems, for instance the noise and air pollution related to the rubbish trucks, will not be further aggravated. The opposition to the expansion of the Tuen Mun landfill by residents in Tuen Mun and Shenzhen Wan, which is separated from the landfill by the Deep Bay, shows evidence of the impact of the intense and far reaching foul smell from the landfill\textsuperscript{17}. Hence, if waste charging can discourage the generation and disposal of waste, there will be more time for the government to devise new waste treatment plans, which will not lead to further deterioration of the living conditions of residents near the landfills.

Some people worried about fly-tipping after the implementation of waste charging. However, the presence of loopholes should not be the reason for aborting a regulation. In an analogy, the idling engine ban should not be abolished just because it is difficult to penalize drivers who have breached the law. As mentioned previously on P. 11 that the majority (62\%) of the respondents in the survey will sort waste for recycling after the implementation of the waste charges. This indicates that the majority of people will change their behavior to reduce waste production, rather than evading the payment by illegal means. In fact, monitoring measures and spot checks could be conducted to deter people from fly-tipping, instead of shelving this proposal, which will help alleviate the waste problem in Hong Kong.

\textsuperscript{16} Policy Address, 2013
\textsuperscript{17} China Daily, “Foul air rises over landfill expansion”, 30 September, 2013.
Which of the charging mechanisms is effective in Hong Kong?

In concern with the charging mechanism, I think that “quantity-based” charging will be more effective. In comparison with “proxy-system” and “fixed-charge system”, “quantity-based” charging scheme is directly related to the amount of waste produced and will be a much stronger incentive for people to reduce waste or sort the recyclable waste for recycling. Take the example of the plastic bag levy implemented in 2009. The government suggested “a reduction of 91.3 percent in the distribution of plastic bags since the levy went into effect”\(^\text{18}\). As the levy is charged according to the number of plastic bags used, it is proven an effective incentive for people to reduce their usage. On the other hand, “proxy-system” does not help trigger the need for a change in behavior. For instance, the sewage charge in Hong Kong, which is proportional to the water used, does not provide an incentive for reducing the sewage produced and the materials that pose difficulties in treatment. A study of the waste charge levied according to the water bills in Taipei also shows that charging by proxy failed to “attract people to reduce production solid waste.”\(^\text{19}\)

Some people worry about how the amount of waste could be measured. The experience in Taipei City helps to relieve some of their concerns. Following their practice, households need to purchase designated garbage bags for waste disposal. In this way, people may try to reduce the number of bags to be disposed of by waste sorting or changing their habits to reduce waste generation.

It is the shared responsibility of every citizen to pay for the waste generated. It is fair for people to pay according to the amount of waste produced, instead of having all tax payers to shoulder up the waste treatment costs. At present, the cost of transporting and treating waste is about $215 per year per Capita, from public expenditure\(^\text{20}\). The garbage collection fees collected by some building management companies do not constitute the expenditure of the waste treatment at landfills. In accordance with the polluter-pays principle, waste charging is a means for “waste producers” to be responsible for their own waste disposal.

“Partial-charging” on the commercial and industrial sector although will be much easier for implementation, it will not be able to alleviate much of the waste problem as 66% of the waste disposed of at the landfills is from domestic sources.\(^\text{21}\) Waste charging has been put forward for discussion since 2005 and the pressure on landfills

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\(^{19}\) From 吳振發，賴純絹，台灣地區垃圾費徵收制度實施與政策意涵—以台北縣為例, 2002.

\(^{20}\) Green Power website

\(^{21}\) Data from the Environmental Protection Department website
is imminent. There is no time for the government to waste. Waste charging should be imposed on both the commercial and industrial sector and the domestic households.

Suggestions
A. Consensus building through consultation
Friends of the Earth has criticized the government for delaying the implementation of waste charging by conducting lengthy consultations. The government should allow sufficient discussion among the public before the implementation of new measures. Table 2 shows the diverse views among citizens on waste charging. Through consultations, the government will be able to achieve a broad consensus among citizens on the implementation of waste charging. During consultations, the government can provide more information about the new measure to the public, promoting waste reduction. Besides, consultations are a necessary tool for the government to identify the concerns of different stakeholders (for example, whether it exerts heavy burden on low-income class, its effects on the production cost of the commercial sector) for deciding the most acceptable charging mechanism and the charging amount that exerts a deterrent effect and at the same time, not too unrealistic which may encourage fly-tipping.

B. Enhancement of Recycling Facilities
Nevertheless, Hong Kong cannot afford a long consultation period since the landfills will be exhausted by 2020. In order to facilitate waste charging to achieve its targeted effects, recycling facilities and systems should be enhanced. As shown in Table 1, the proportion of waste recycled in Hong Kong is too low. Besides, more than 30% of the waste disposed of at the landfills is food waste.22 If there is no enhancement in sorting and treatment facilities in Hong Kong, a large proportion of waste cannot be reduced to a great extent even with the waste charging imposed.

In a nutshell, waste charging is an appropriate measure to reduce waste in Hong Kong. The government should launch further consultations on the details of waste charging as soon as possible. Besides, to fulfill the purpose of waste charging as an incentive for waste reduction, more recycling facilities should be introduced to help the public cultivate habits of reducing waste disposal.

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