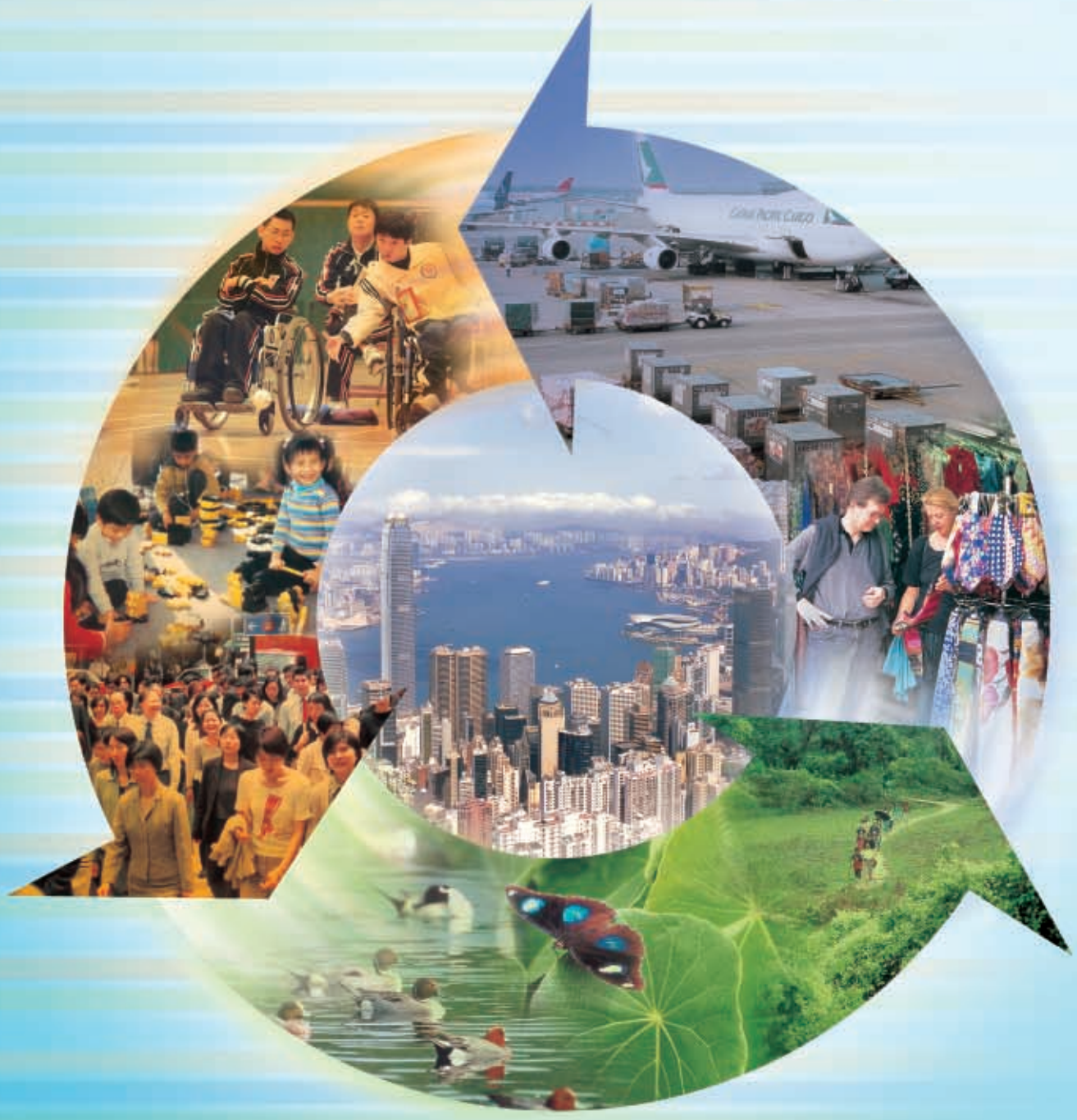
Sustainable Development
Making Choices for Our Future

An Invitation and Response Document



Council for Sustainable Development
July 2004

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Making Choices for Our Future

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Sustainable Development

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FOREWORD

We live in one of the world's most dynamic cities. Our community is well known for its ability to adapt quickly to new trends and constraints in order to sustain our economic growth. One of the key challenges that we now face is the need to make changes in our lifestyles if we wish to enjoy the benefits of economic prosperity whilst meeting our growing social and environmental aspirations. Moreover, we need to focus on how best to make these changes in the face of competing needs and objectives.

Some twenty years ago, a group of people working under the banner of the United Nations started developing a set of principles that can be summarised in two words: sustainable development. These principles aim to help us seek common ground among competing social, economic and environmental values, and to use this as a basis to ensure that future generations will enjoy a good quality of life.

In Hong Kong, there is a growing awareness that we need a new way of looking at the challenges we face and making the appropriate choices. If we want to live in a city that will meet our rising expectations for social and economic development and a pleasant natural environment, as well as be a place that our young people can grow up to take pride in, we will need to work together to ensure that our development is sustainable.

This Invitation and Response document represents the start of a unique process of engaging Hong Kong people in an important debate about the shape of our future. It offers information and seeks responses both from the public and the Government on issues that have a strong relevance to our lifestyles. It also offers everyone in the community the opportunity to be a part of the process of influencing decisions that will have an impact on our sustainability. The response from the community and the Government will enable the Council for Sustainable Development to provide advice and guidance on the implementation of key policy issues.

This document is not a means for Government or other interested parties to advocate a specific set of policies. Rather, it has been prepared with the aim of sharing with the community some of the problems that we face and offering some possible scenarios and options for the future. In order to find sustainable solutions, we must all work together in finding the best choices for Hong Kong.

I encourage you to respond to this document, which is the first of a series in an engagement process that will be regularly repeated, each time addressing particular issues of concern. I am confident that in responding, you will signal your willingness to help take responsibility for a sustainable future for our city.

As the Chairman of the Council for Sustainable Development, I assure you that your feedback will be valued and that the Council intends to make sustainability principles a cornerstone of policy making in Hong Kong.

Donald Tsang
Chairman, Council for Sustainable Development

EXECUTIVE SUMMARY

Engaging the Community

In November 2003, the Council for Sustainable Development (SD)[1] convened a workshop that was attended by over 80 stakeholders from different sectors. At the workshop, people from various backgrounds discussed how the Council might engage Hong Kong people in a dialogue about pursuing sustainable development.

2. The outcome of the first workshop hosted by the Council for SD was a proposal for an Engagement Process that would –

- Allow the public to participate fully in a regular discussion of priorities for Hong Kong's long-term sustainable development
- Involve a wide range of organisations in a partnership with the Government of the Hong Kong Special Administrative Region ("the Government") in defining the priorities for our sustainable development in certain key areas
- Provide feedback that would help the Government to implement policies that would contribute to making Hong Kong a sustainable city.

3. The issue of this document marks the beginning of the Engagement Process. It invites you to consider some of the issues that will affect our future and to give your views on how our city should develop for our own benefit and for the benefit of future generations.

Pilot Areas

4. There are many specific policy areas that cut across a number of sectors and that have an influence on Hong Kong's sustainable development. Initially, the Council for SD has invited the Principal Officials of the Government who sit on the Council to propose Pilot Areas that might form a basis for a public discussion of policies that will shape our sustainable development. Having considered the proposals put forward by the Principal Officials, the Council has decided to start by concentrating on the areas of Solid Waste Management, Renewable Energy and Urban Living Space. In these areas, we are asking the following broad questions –

1 What are the best ways of managing our Solid Waste now that the landfills are nearing saturation point and given constraints on our land resources?

2 Should Hong Kong start developing sources of Renewable Energy now? If so, how should we go about this?

3 How can we make our Urban Living Space more attractive and enjoyable for local residents and for visitors?

[1] The Council for SD was appointed by the Chief Executive in March 2003. The Council's Membership and Terms of Reference are at Annex I of this document.

1) *Solid Waste Management*

5. Most of our solid waste is disposed of in landfills. This is a convenient way of dealing with our refuse, even though it requires us to give up large amounts of land in rural areas and costs the taxpayer some $1.5 billion annually.

6. However, within the next decade, our landfills are almost certain to reach full capacity. This means that we have to make some choices quickly as to how we will dispose of our solid waste in the future. These choices will involve issues such as –

- Whether we as a community can change our consumption and waste disposal practices so as to move closer to being a "waste-free" society
- Whether we should continue to rely on landfills, and whether we can accept the environmental and economic implications of such a choice
- Whether we should encourage households and businesses to reduce and recycle, by charging directly for waste disposal under the "Polluter Pays" principle, rather than continue to rely on the public purse
- Whether we should provide more support for the recycling industry so that the community can enjoy more economic gain through this business sector
- Whether the principle of social equity can be enhanced through fair sharing by the community of the costs incurred in waste disposal and benefits derived from business development.

7. Chapter 2 of this document provides more information and outlines possible scenarios for how we might deal with the issue of managing our solid waste. Each of these scenarios has implications for a more sustainable approach in this area.

2) *Renewable Energy*

8. Hong Kong households and businesses enjoy a reliable supply of electricity, most of which is generated locally by power plants that use fossil fuels such as coal, oil and natural gas. Although there is currently an abundant supply of such fuels worldwide, these resources will not last forever. The prices of fossil fuels are subject to fluctuations that can have an effect on the local economy. Furthermore, burning fossil fuels has an impact on air pollution and on levels of carbon dioxide emissions that many scientists believe are contributing to global warming and climate change.

9. Many governments have decided that there is a need to begin using renewable sources of energy that will provide a sustainable long-term supply, and that will also be cleaner and cheaper in the long run than fossil fuels. Current technologies for renewable energy that might be used in Hong Kong include: wind power, solar power and the treatment of solid waste (or "Energy from Waste").

10. Given the relatively small amount of available land in our city, there are a number of economic, social and environmental constraints involved in assessing how we should introduce renewable energy in Hong Kong. These issues are discussed in chapter 3 of this document, which sets out some possible scenarios for change and also considers questions such as –

- Whether we should generate some of our electricity from renewable energy sources
- Whether we should be prepared to pay more for our electricity in the short term in order to develop renewable energy sources
- Whether we should encourage the existing power companies and potential new investors to develop renewable energy facilities.

3) Urban Living Space

11. In Hong Kong most people live within a relatively small area, and we are used to having one of the world's densest urban environments. This provides us with certain advantages, such as easy access to efficient transport and other services, and helps to make such services affordable for most people. However, our urban living space does not necessarily provide a pleasant environment in terms of accommodation and public health standards, open areas for recreation or a visually attractive landscape.

12. In chapter 4 of this document we consider some of the options for enhancing our urban living space, with particular emphasis on –

- Changing the balance between further development of the urban area and the New Territories to create more attractive living environments
- Revitalising older urban areas that are suffering from decay and neglect
- Encouraging the design of buildings and other facilities that would help make Hong Kong a more attractive city in which to live and work.

1 SUSTAINABLE DEVELOPMENT AND ENGAGING THE COMMUNITY

The basis for an SD strategy

In order to move towards **Sustainable Development (SD)**, we need to make informed choices about how best to advance our economic and social development while protecting our natural environment.

> **What is Sustainable Development?**
> *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* – Mrs Gro Harlem Brundtland in her report "Our Common Future" to the United Nations, 1987.

2. The international community increasingly emphasises the importance of sustainability. In 1992, the United Nations Agenda 21 called for countries, cities and other administrations to develop their own strategy or agenda for SD. An SD strategy usually comprises a vision or direction, together with targets and programmes in areas that are important to the long-term sustainability of a society. Over 7,000 administrations worldwide have developed or are developing their own Agenda 21 or SD strategies.

3. The Council for SD was appointed in part to advise on the preparation of an SD strategy for Hong Kong. The Council has already outlined its broad vision for such a strategy, in the following terms –

> *"Our vision is for Hong Kong to be a healthy, economically vibrant and just society that respects the natural environment and values its cultural heritage. By engaging the community in the process of building a strategy for sustainable development, we aim to ensure that Hong Kong will be a city for all to share and enjoy, for this and for future generations"* – Council for SD, Paper 05/03 (2 June 2003)

4. It is important to appreciate that, in building a strategy, we must identify not only a broad vision for Hong Kong's sustainable development, but also specific long-term policy directions that will help us to make decisions that are consistent with the principles of sustainability.

The process for formulating an SD strategy

5. Taking advice from stakeholders in the community, the Council for SD has devised an **Engagement Process** for building an SD strategy for Hong Kong. The process has five stages –

I. **Identifying Pilot Areas** –
The Council for SD has chosen three policy areas as "Pilot Areas" for the initial stage of formulating the SD strategy. These areas were initially proposed by the Principal Officials who

sit on the Council, and represent a first attempt to identify issues that are relevant to Hong Kong's long-term sustainability. There are of course many other such issues, and depending on the outcome of this engagement process, the Council will address these in the future.

II. **Preparation of a document to invite responses** –

The Council has set up three Support Groups, comprised mostly of non-government stakeholders, to advise on the preparation of this document. Having non-official contributors play an active role helps to emphasise that this process is a partnership, and is not just driven by the Government. Each group has worked independently on the chapter relevant to its Pilot Area, which is why the presentation of the issues differs in some respects from chapter to chapter.

III. **Directly involving the wider community** –

The Council will encourage people from all walks of life to respond to this document. Together with partner organisations, we will host events such as exhibitions, hearings and seminars to raise awareness and to provide a platform for stakeholders to meet and discuss the issues involved. We will also communicate through print and Internet-based media and TV and radio broadcasts.

IV. **Reporting** –

The Strategy Sub-committee of the Council, with the help of the Support Groups, will assess the response from the community and present a report to the Council. Points of consensus, as well as areas where there are conflicting views will be highlighted. Government bureaux will also be required to give their responses. The Council will then advise the Government on the way forward for the Pilot Areas, from the point of view of sustainable development.

V. **The Government to act** –

The Government, having taken into consideration the Council's advice, will publish a strategy document outlining the measures that it will propose in order to move towards sustainable outcomes in the relevant Pilot Areas.

6. This process will be reviewed and repeated with new priority areas. We shall involve the community in selecting the future areas and issues that will be examined and incorporated into the SD strategy.

2 SOLID WASTE MANAGEMENT

Introduction

Hong Kong has a dynamic consumer society. We exercise our purchasing power to buy a wide array of goods and services, and we regularly seek to upgrade our living standards by erecting new buildings and developing the city's infrastructure. These activities can help to boost our economic growth. However, many people would argue that Hong Kong, like many economically developed cities, has an ecological footprint that is unsustainable.

One very tangible by-product of all our consumption is the generation of large amounts of solid waste, much of which is general household refuse or the result of demolition or construction. In the past we collected and disposed of such waste by utilising landfills or reclaiming land for additional housing, infrastructure or amenities. We have also managed to recycle some of this waste, though far from enough. As a consequence more and more of our waste has gone into the remaining landfills in remote parts of Hong Kong – to the extent where these will shortly be filled up.

We now need urgently to develop a road map to ensure that the problem of generating too much waste and of disposing of our waste does not affect our ability to develop as a world-class sustainable city. This chapter outlines some of the problems we face, and suggests potential options for dealing with these problems.

I hope that you will learn from this chapter that the issue of solid waste management not only affects our environment and our quality of life, it is also an issue of social equity. We have to consider the question of "who pays for what" and "who benefits from which". It also affects our economic prosperity. As we contemplate the options for developing an efficient waste management framework for Hong Kong, we will need to bear all these factors in mind.

As consumers of many modern luxuries and as generators of waste, we have the responsibility to tackle this dilemma collectively. We look forward to receiving your views on the questions at the end of this chapter, as well as on any other ideas that you might have. This will help us to develop a sustainable solid waste management strategy.

Albert Lai
Convenor, Solid Waste Management Support Group

Why is solid waste management an important sustainable development issue for Hong Kong?

The way we manage our solid waste has significant long-term implications for our public health, our economy and our natural environment. If we do not take a more sustainable approach to our waste management, some of the consequences will be –

- **Rapid depletion of land resources** to cope with the increasing volume of waste requiring disposal at landfills (waste disposal already uses up an area equivalent to one new town every 6 to 7 years, and the volume of waste doubles every 20 years);
- **Increased pressure on public finances** caused by the growing demand for treatment and disposal facilities for solid waste
- **Damage to the natural environment** through the loss of natural habitats, scenic areas and cultural heritage to provide waste facilities, and possible increases in illegal dumping from waste disposal contractors unwilling to travel to landfill sites; and
- **Loss of economic opportunity** from the lack of development of alternative treatment, disposal and re-cycling industries that would create business and employment opportunities.

We seem to have solid waste management under control. Why change?

2. Most people do not think that we have a waste problem. Hong Kong's key waste disposal facilities (i.e., the landfills) are remote from most urban areas, and we barely notice their existence. They are "out of sight, out of mind".

3. Hong Kong is one of the few major cities in the world where people do not pay directly for waste disposal services, however, we may soon charge for construction waste. Although consumers do not pay individually to have their solid waste collected and disposed of, as taxpayers, we do currently pay $1.5 billion each year just for the collection, treatment and disposal of municipal solid waste.

4. Our landfills only have sufficient capacity to last another 7-11 years. Some time within the next decade, we will have to develop new waste management facilities unless there is a drastic reduction in waste generation. If we continue to rely solely on disposing our solid waste in landfills, we will need an area of 400 hectares (about 24 times the size of Victoria Park) to develop new landfills, at a likely cost of some $12 billion, just to meet our needs up to 2030.

How do other communities manage their waste?

5. Studies of solid waste management strategies in other cities show that –

- There is increasing concern as to the potential environmental impact of landfills, particularly their impact on global climate change, groundwater and the effects of the disposal of hazardous waste.
- Most developed cities employ diverse waste management options. Some cities have proclaimed a goal of "zero landfill waste".
- A number of cities use thermal or other waste treatment processes in their waste management programmes. The most widely used form of thermal treatment is incineration. However, recent advances in technology mean that thermal treatment plants are able to meet much more stringent emission standards than old-style "incinerators".
- Few governments provide free waste collection and disposal services. Instead governments worldwide implement a "polluter pays principle" whereby consumers are charged directly for the amount of waste they produce. This has often provided a catalyst for waste reduction.
- Despite efforts to boost waste recycling, many recycling schemes have insufficient market outlets. Many cities are using economic instruments to sustain their recycling industries.
- Many cities have implemented "Producer (or Product) Responsibility Schemes" that require manufacturers and importers to collect waste that arises from the goods they produce or sell and to recycle it.

Figure 2.1
Strategic Landfills in Hong Kong
(capacity to last another 7-11 years only)

6. Table 2.1 below compares the situation in Hong Kong with that of some other cities.

	London	Singapore	Taipei	Hong Kong
Waste Management Strategy	Municipal Waste Management Strategy 2003	Singapore Green Plan 2012	Zero landfill and total recycling by 2010	Devising a strategy that will meet our future needs
Gist of Waste Management Strategy	– Two new treatment facilities planned – Considering a new thermal treatment plant and a single waste disposal authority – Encouraging recycling and phasing in recovery targets	– Increasing waste recycling rate – Promoting waste minimisation – Setting up sustainable collection and recycling infrastructure – Addressing waste generation at source (redesign of processes and packaging)	– Seeking to reduce waste at source – Using waste as a resource (total waste separation) – Diversifying disposal options – Initiating programmes that include waste sorting and utilisation of ash from incinerators	– Following Waste Disposal Plan 1989 and Waste Reduction Framework Plan 1998 – Landfill is the main waste disposal facility – Promoting waste minimisation and recycling through education and facilitation
Waste management programme[1]	Landfill – 73% Thermal treatment – 19% Recycling & composting – 8%	Landfill – 1.4% Thermal treatment – 50% Recycling – 45%	Landfill –15% Thermal treatment – 56% Recycling - 24% Composting - 1% Others – 4% (kitchen left overs as animal feed)	Landfill – 59% Recycling – 41%[2] (Although recovery of *household* waste was only about 14% in 2003)
Direct Charges to Citizens	Landfill tax and landfill charge for waste disposal at landfills	Refuse collection and disposal charges	– Fee levied for collection and disposal of waste – Pay-Per-Bag for waste from "low-rise" households	– No fee levied on collection and disposal of waste – Aim to have charging for construction waste in 2005
Producer Responsibility Schemes (PRS)	– Recycle packaging waste according to EC Directive – Plans exist to cover other waste streams	Intend to start PRS with companies in packaging supply chain	For dry cells, motor vehicles, lubricants, tyres, computers	Studying PRS for tyres, beverage containers, batteries and electronic & electrical products

Table 2.1 Comparing Hong Kong with other Cities

[1] As there are some differences in the classification of waste types in different cities, the figures in the table are indicative only.

[2] The normal recycling rate in HK is about 36%. The recent increase is due to the high recovery rate of metals as a result of demand from the Mainland in 2003. When demand from the Mainland drops, the recycling rate will likely return to "normal" rates. [Source: Environmental Protection Department]

Figure 2.2
Incineration Plant with energy-from-waste recovery, Azalys,France
(Courtesy of Architect A. Salin)

What choices and decisions will make Hong Kong's waste management more sustainable?

7. We have identified three broad scenarios, which represent possible responses to the challenge of solid waste management. These are summarised in Table 2.2.

Scenario I. "Do Nothing" or Minimum Response

8. One response is simply to continue with current practices, with no new initiatives to reduce waste volume, develop new disposal options or encourage recycling. Such a response would arise from concerns about the need to minimise possible social conflict and political pressure in the short term.

9. Various government departments would continue playing their separate roles in waste management[3]. Landfills would continue to be the main disposal facilities and would be gradually extended. Some voluntary recycling would reduce the amount of waste requiring final disposal. Voluntary programmes to separate waste at source would continue for waste recovery and recycling. Land for the recycling industry would continue to be allocated on a short-term basis.

[3] The Food and Environmental Hygiene Department collects waste, the Environmental Protection Department manages waste facilities and the Lands Department monitors illegal dumping, just to name a few key players.

	"Do nothing" Response (minimum)	"Incremental" Response (piecemeal)	"Progressive" Response (comprehensive)
Vision	Maintain current practice	Introduce measures for gradual improvement	Embrace SD principles
Guiding principles	Avoid solutions that may cause social conflict or political pressure in the short term	Tackle problems as they arise, assuming community support for small waste charge	Reconsider how we manage waste, encourage a community effort and a long-term sustainable approach
Institutional Arrangements	Various departments, each doing part of the work	Task Force or Committee strengthening coordination between departments	A single authority overseeing solid waste management
Technical Options	Rely solely on landfills and voluntary recycling	– Explore new sites for landfills as current capacity runs out – Build other waste treatment facilities – Encourage greater waste recovery	– Develop diverse waste management options – Use advanced technology to reduce bulk volume of waste – Use landfills only for waste that cannot be treated
New Financial Instruments	None	– Landfill charges for construction and demolition waste – Consider waste collection and disposal levies at "flat rates" for all businesses and households	– Volume based collection and disposal charge (e.g., per bag of waste) – Pricing and market instruments to promote expansion of the recycling industry – Producer Responsibility Schemes (PRS)
Other Options	– Voluntary "source separation" programmes (SSP) – Environmental education	– Extend the coverage of SSP – Landfill ban on specific waste types – More consumer and environmental education	– Wide coverage of SSP – Progressive landfill bans – Promote green consumption – Develop and promote markets for recyclable material
Other measures facilitating involvement of private sector	Land allocated on a short-term basis to recyclers	– Campaigns funded by Government – Setting up of a recovery park	– More public-private partnership in procuring facilities and services for waste management – Encourage a "high-end recyclables" industry – Set up a recovery park – Arrange with Mainland authorities to export recyclable material

Table 2.2 Summary of Broad Scenarios

Scenario II. "Incremental" or Piecemeal Response

10. A less passive response would be to establish task forces or standing committees to improve waste management by strengthening coordination between government departments. Landfill charges for construction waste would be introduced, with the passage of the Waste Disposal (Amendment) Bill 2003. Government could consider levying a flat-rate waste collection and disposal charge (e.g., at a certain percentage of the rateable value of properties) to help cover the cost of providing these services. Such a response assumes that the community would support a small direct charge and new measures to tackle these problems.

11. Landfills would still be the main disposal facility and new landfills would be planned. Other waste treatment facilities would be upgraded or built as the need arises. The Government would encourage greater voluntary waste recovery.

12. To give further impetus to waste reduction efforts, the Government would fund campaigns to promote waste reduction, recovery and recycling. There would be enhanced educational and publicity efforts and a landfill ban could be introduced for certain waste types. Recovery parks might also be set up.

Scenario III. "Progressive" or Comprehensive Response

13. This response would require us to make decisions based on embracing the principles of sustainability. Such a response is feasible when the community recognises the need for a sustainable approach to waste management and there is general support for "user-pays" charges.

14. Under this scenario, there would be a single authority responsible for planning and managing all aspects of solid waste management, including reduction and recycling programmes. This authority would have the responsibility for proposing legislative changes, monitoring progress and ensuring compliance in a concerted effort with the community. At the same time, it might be the regulatory authority for private sector waste management operations.

15. To provide for direct recovery of the costs of waste disposal, a volume based waste collection and disposal charge would be introduced. This would provide a strong incentive for further waste reduction and could help promote the viability of the recycling and waste recovery industries. Further administrative arrangements could be put in place to stimulate these businesses. Producer (or Product) Responsibility Schemes would be introduced to give an impetus to waste reduction efforts. Landfill bans would apply to certain types of waste in order to reduce environmental impacts at landfills and to divert resources for recycling.

16. Landfills would still be required for residual waste or waste that cannot be treated. However, a diversity of options would be developed to prolong the lifespan of landfills so as to conserve land and protect our natural environment. For example, thermal treatment plants could help reduce the bulk volume of waste. Such facilities would be very different from the old-style "incinerators". They would use state-of-the-art technology and design to ensure that harmful emissions and adverse visual impacts would be minimal. Material and energy recovery would be an integral part of the

operation of such facilities. Facilities for biological waste treatment, such as composting could also help to reduce our reliance on landfills for disposal.

How will these choices affect all of us?

17. Not making choices now may well lead to us having to make more difficult decisions in the long run. These are some of the likely implications of the three scenarios –

Scenario I. "Do Nothing" Response – Implications

- **Economic**:
  There would be no immediate direct new cost to individual households and businesses. The public purse would continue to bear the full cost of waste management, and this could well encourage wasteful practices. In addition, we would have to continue to give up land for waste disposal facilities. Without appropriate economic incentives, there would be limited opportunities to develop the recycling industry.

- **Social**:
  This approach could lead to conflict over the extension of new landfills and the location of other waste facilities. Public health risks might emerge if we do not manage the waste problem properly. The community would lose confidence in the Government's ability to deal with the problem.

- **Environmental**:
  The potential environmental impacts of landfills would continue to increase. Waste volumes would continue to grow and some of the "quick fix" solutions that could be needed to cope with this might cause increased harm to the natural environment. Without proper long term planning we might have to accept that there will be impacts on our country parks, fresh water catchment areas, and sites of cultural or natural heritage interest.

Scenario II. "Incremental" Response – Implications

- **Economic**:
  Individual households and businesses would face additional charges for waste disposal and collection, regardless of the volume of waste they generate. Improved waste separation efforts might attract some new business opportunities for the waste recovery industry.

- **Social**:
  Introducing a flat-rate charge could be a source of discontent, as it would be seen as unfair to households and businesses that recycle, recover and produce less waste. New community recycling programmes could increase social networks.

- **Environmental**:
  Waste volumes would likely continue to increase, albeit at a lower rate, necessitating continued extensions of landfills in countryside areas. Rather than paying disposal charges, some operators would dump waste illegally, and appropriate enforcement responses would be needed.

The "Incremental" response would only provide interim relief. The various problems identified under the "Do Nothing" response scenario would also eventually arise.

Scenario III. "Progressive" Response – Implications

- **Economic**:
  Individual households and businesses would face additional costs in the form of the disposal and collection charge based on volume. Public financial resources could be saved or re-allocated to other services. One-off capital costs would be incurred initially in building new waste disposal facilities for thermal or biological treatment. New business opportunities would emerge for the waste management, recovery and recycling industries. Land resources need not be earmarked for new landfill sites, and could be preserved for other public uses.

- **Social**:
  There could be concern that the volume-based waste disposal and collection charge might have some impact on lower income groups. Opportunities for community level involvement in recycling could boost social networks. Further development of the recovery and recycling industries could help create jobs.

- **Environmental**:
  A policy of full cost recovery would encourage people to produce less waste, thus reducing the volume of waste requiring final disposal. There might be concerns about the visual impacts and emissions arising from the development of thermal and other new treatment facilities. Such impacts could be minimised with proper planning and consultation and use of state-of-the-art technology. Again, rather than pay waste charges, some people may dump waste illegally, with adverse implications for our natural environment.

Some Key Questions

18. This chapter provides some background information on the issue of solid waste management with the aim of stimulating an open and inclusive debate on how future action in this area can help Hong Kong to become a sustainable world city. To frame this debate and provide some initial guidance to stakeholders, this chapter concludes with a few questions. We appreciate that the answers to these questions might on the face of it be a simple "yes" or "no". That would still be a valuable response. However, we hope that the questions will also stimulate broader thinking and more substantive responses. All views will help to shape the advice that the Council for Sustainable Development will give to the Government on what needs to be done in this area to promote sustainability.

1. Should we charge households and businesses directly for the waste management services provided? If so, should this charge be a flat rate for all, or should it be based on the volume of waste generated by each individual household or business premises?

2. Given that landfills are considered unsustainable means of disposing of solid waste, and in view of the limited land space available in Hong Kong, should we now be planning to build alternative waste disposal facilities, such as thermal treatment plants or composting facilities?

3. Given that locating new waste facilities is going to be challenging, should the Government consider offering incentives to encourage communities to accept such facilities?

4. Should the Government put in place more progressive arrangements to stimulate the recovery and recycling industries?

5. Should we set up a single authority to plan and manage all aspects of our solid waste management?

6. When implementing new policies, what measures might we take to make the sharing of cost burdens and economic gains more equitable to all sectors of the society, especially disadvantaged communities?

Further Information

We have tried to keep the presentation in this document concise and to focus on a few key points. If you would like to know more about solid waste management and the deliberations of the Support Group, you might wish to look at the website for the Sustainable Development Strategy, which is at: **<http://www.susdev.org.hk>**. The following websites also have information on this area –

- Information on waste generation, reduction and management in Hong Kong <*http://www.epd.gov.hk/epd/english/environmentinhk/waste/waste_maincontent.html*>

- Taipei's waste management strategy - Zero landfill and total recycling by 2010 <*http://www.epb.taipei.gov.tw/about_epb/2010bury/index.htm*>

- Singapore's action programme on waste management under "Singapore Green Plan 2012" <*http://www.nea.gov.sg/sgp2012aps/wastemgmt.htm*>

- "International and European Waste Management <*http://www.wasteonline.org.uk*>

- London's municipal waste strategy <*http://www.london.gov.uk/mayor/strategies/waste/index.jsp*>

3 RENEWABLE ENERGY

Introduction

The term "renewable energy" describes energy resources that can be regenerated or renewed in a relatively short period of time and thus provide a continuous and unlimited supply of energy[4]. Examples of renewable energy sources include the sun, wind and bodies of water. Some international organisations and economies also consider energy extracted from solid waste through environmentally sound technologies to be renewable energy.

In many respects, renewable energy is environmentally friendly and can offer a "clean" alternative to fossil fuels such as coal, oil and gas. However, many forms of renewable energy (especially wind and solar energy) occupy large amounts of space and might not be able to provide a reliable supply of energy. Also, with present technology, generating renewable energy often costs more than using fossil fuels.

This document aims to provide you with some basic information about –

- Renewable energy as a source of power,
- How renewable energy is being developed in other parts of the world,
- How we might develop renewable energy in Hong Kong, and
- What some of the benefits and challenges might be of developing renewable energy locally.

More importantly, we would like to engage you in a dialogue on how using renewable energy might help make Hong Kong a sustainable world city.

We look forward to receiving your views.

Otto Poon
Convenor, Renewable Energy Support Group

[4] Reference: Renewable Energy Projects Handbook, World Energy Council, 2004

How can renewable energy contribute to sustainable development?

In the past 150 years, the growth of the world's economy has relied on the extensive use of energy from sources such as coal, oil and natural gas. Over that period, we have been steadily using up the world's stock of fossil fuels. There is only a finite supply of such fuels. With growing demand due to increases in population and economic growth, it is likely that these sources of energy will shrink sooner rather than later and eventually be exhausted. Higher energy prices will eventually result from the shortage of fossil fuels if these remain our only major energy sources.

2. Generating energy from fossil fuels creates air pollutants such as SO_2, NO_x and particulates, which contribute significantly to smog, acid rain and human respiratory diseases (such as emphysema and asthma). It also results in the emission of large amounts of CO_2, which is a major factor in global warming and related climate change.

3. Scientists have predicted that as the level of CO_2 in the atmosphere reaches certain high levels[5], the resultant "green house" effect could cause the world's average temperature to rise by 1.5°C. This in turn would cause the average sea level to rise by about one metre, leading to irreversible damage to natural environments and human livelihoods. The possible consequences would include the extinction of species, loss of coastal land, increased risk of famine due to reductions in crop yield and the loss of farmland and fish habitats, and increased risks of infectious diseases. Hong Kong, as a coastal city, would be severely affected.

4. Given that the supply of fossil fuels is finite, and in view of the adverse effects that using greater amounts of fuel will have on the world's environment, there is a need to explore whether sources of renewable energy can provide us with an alternative way of meeting our long-term energy requirements.

Why should we now consider renewable energy for Hong Kong?

5. A commitment to developing renewable energy (RE) sources has been adopted in many places, with a view to addressing the problems of air pollution and climate change and helping to secure future energy supplies. China has recently established a basic national policy on RE, and has drafted a law to support the implementation of this policy. With a review of the local energy market due to begin shortly, this is a good time for us to start discussing how Hong Kong might use RE in order to ensure the sustainability of our energy supply and to play our part in contributing to improving the global environment.

[5] That is, an increase of another 20% from the current level. For reference, levels of CO_2 in the atmosphere have increased by 40% since the beginning of the industrial revolution in the 18th century.

What are other communities doing to develop RE?

6. Different places have their own strategies for developing RE. Japan is currently the world leader in solar energy use. Many European countries use hydropower as a source of RE, although, due to the adverse ecological effects of large hydropower plants, these countries are looking to other RE sources or building smaller scale plants. Germany, the Netherlands and the Nordic countries use wind power extensively. The German state of Schleswig-Holstein has 1,800 MW of installed wind capacity, enough to meet 30% of the state's energy needs[6]. Some cities and countries are looking at how RE can be provided by "Energy from Waste" facilities.

Figure 3.1
Onshore Wind Farm at Albany, Australia

7. The following table shows how some places plan to develop RE:

	Projected Electricity Generation from RE		
	EU – 2010	**Japan – 2010[7]**	**USA – 2020[8]**
Wind	5.55%	0.51%	0.82%
Photovoltaic (solar)	0.12%	0.45%	0.01%
Biomass[9]	4.66%	2.22%	1.05%
Hydroelectric	11.74%	7.57%	5.71%
Others	0.23%	N/A	0.77%
Total	22.3%	10.75%	8.36%

[6] Source: Wind Energy, The Facts, European Wind Energy Association, 2004
[7] Source: New Energy Foundation, Japan
[8] Department of Energy, the United States of America
[9] Including solid waste

8. Countries that promote the use of RE accept that the current direct financial cost is generally higher than that of using fossil fuel. To promote the use of RE, some of the following measures are commonly applied –

- *Policy Support*: including a comprehensive RE policy and strategy, and support for research and development in the area. National or regional targets, most often voluntary, are also set.
- *Regulatory Measures*: such as mandatory RE targets for electricity suppliers and an obligation for grid operators to take electricity from RE sources, usually at specified prices.
- *Fiscal Measures*: to help address the issue of higher direct costs. These measures include: minimum guaranteed prices for RE generators, low interest loans or tax breaks for RE programmes and levies on fossil fuels.
- *Education and Information Campaigns*: to enhance public awareness and acceptance. Campaigns use demonstration projects, case studies, media coverage and information on the benefits of RE.

What are the practical sources of RE for Hong Kong?

9. The feasibility of RE development often depends on geographical factors. Hong Kong's geography and weather patterns mean that the practical sources of RE available locally, given current technological limitations, are solar, wind power and energy-from-waste. The population density of Hong Kong means that we have more constraints in locating RE facilities than many other places.

10. Currently, RE projects in Hong Kong are on a small scale (capacities of up to tens of kW). For example, the Government has installed solar panels for generating electricity or heating water on some public buildings. It also uses wind and solar energy to provide power for remote weather monitoring stations. The Government, power companies, universities and non-government organisations have set up or are planning[10] pilot RE projects for research and demonstration purposes. A few private housing estates use solar energy to provide hot water for domestic use.

Figure 3.2
Solar Photovoltaic System at Wan Chai Tower

[10] In 2003, Hong Kong Electric Co. Ltd. and CLP Power Hong Kong Ltd. agreed to set up commercial-scale wind turbines (of 600 kW capacity or above) in Hong Kong for public demonstration and evaluation purposes.

How much RE could we generate in Hong Kong?

11. A government-funded study published in December 2002[11] calculated the maximum amount of RE that could be generated annually in Hong Kong to be up to 20,763 GWh annually. This is more than half of Hong Kong's total electricity demand of 38,484 GWh in 2003[12]. A breakdown of the total is shown below –

RE Technology	Energy Potential (GWh per year)	Space Requirement (square km)
Photovoltaic (solar) energy	5,944	184
Wind energy		
Land based[13]	2,630	393
Marine based[13]	8,058	744
Urban wind turbines[14]	3,000	-
Energy from Waste		
Landfill gas	448	Relatively small
Incineration	683	Relatively small
Total	20,763 GWh	

Map 3.1
Areas of High Wind Resources for erecting wind turbines

[11] "Study on the Potential Applications of Renewable Energy in Hong Kong"

[12] Source: Census and Statistics Department (figure is net of export)

[13] Assuming installation of wind turbines in linear arrangements (land) and in arrays (marine) at all areas of high relative wind resource (areas in orange in map 3.1)

[14] Mounted on rooftops – assuming installation of 30,000 small wind turbines

12. To achieve the maximum potential amounts of RE shown above, with current technology, the solar panels and wind turbines would take up some 40% of our land and sea areas. This is neither practical nor cost-effective. For reference, the government-funded study proposed that 355 GWh/year (1% of our 1999 electricity needs) could be met from RE sources by 2012.

How much would it cost to generate RE in Hong Kong?

13. Based on existing technology and according to experience overseas, power from most RE sources is more expensive in direct financial terms than power generated by using fossil fuel. The following table shows the potential direct cost of electricity (excluding distribution and transmission costs) from RE sources according to the Study on the Potential Applications of Renewable Energy in Hong Kong –

Photovoltaic (solar) energy		$2.23 - $4.10/kWh
Wind energy	Land based	$0.20 – $0.35/kWh
	Marine based	$0.36 - $0.64/kWh
Energy-from-waste		$0.6 - $0.8 / kWh[15]

14. The estimated generation cost for conventional power stations using fossil fuels, based on international experience, ranges from $0.2 - $0.4/kWh[16]. Such figures are lower than for most RE sources. Furthermore, the above costs for wind and solar energy do not take into consideration the need to install standby generation to maintain supply reliability because of the intermittent nature of these kinds of energy sources. We should also note that land required for wind turbines for the same installed capacity is nearly 1,370 times that of local conventional power stations – although the land between the turbines could be used for other purposes. For example, farms, parks or other low-rise facilities can operate alongside wind turbines.

What are some of the likely costs and benefits of promoting RE in Hong Kong?

15. In considering whether promoting RE might help to make Hong Kong a more sustainable city, we need to consider possible impacts on our own and our neighbours' natural environment, economic development and social conditions. The extent of the impacts outlined below would depend on the degree to which RE is introduced over time, and would vary as new technology is developed.

[15] Source: Energy Policies of IEA countries – Japan 2003

[16] Source: "The Cost of Generating Electricity" by Royal Academy of Engineering

(1) Natural Environment

16. Some of the positive contributions that using RE might make to the environment are -

- Helping to address the issue of global climate change by reducing greenhouse gas emissions from the use of fossil fuels[17]
- Reducing the overall environmental and social impacts of the extraction, transportation and utilisation of fossil fuels
- Conserving fuel resources for future generations

17. Adverse impacts on the environment might include –

- Visual nuisance and noise pollution from solar and wind farms[18]
- Ecological threats to flora and fauna (for example, birdlife) from setting up solar and wind farms
- Possible pollution from energy-from-waste facilities, although using state-of-the-art technology could minimise such an impact

(2) Economic Development

18. Hong Kong's economy could benefit from using RE in the following ways -

- Reduced exposure to potential increases in prices of fossil fuels as these become more scarce
- New business opportunities from the development of RE
- Gradual improvements to air quality, enhancing the overall international image of Hong Kong, and possibly contributing to inward tourism and investment

19. Adverse impacts on our economy from using more RE might include –

- Higher prices for electricity supply in the near term
- A high opportunity cost from allocating land for solar and wind farms rather than other, short-term income-generating uses

[17] Roughly 0.6% reduction in greenhouse gas emissions at 1990 levels per 1% of RE generated.

[18] A wind turbine with a capacity of 2MW could be over 100 meters high and the blades would be 80 metres in diameter

(3) Social Conditions

20. Hong Kong's social conditions might benefit from –

- Fewer safety risks from the transport and storage of fossil fuel
- Civic pride stemming from Hong Kong's international status as a city taking a lead in promoting "cleaner" energy

21. Possible adverse social impacts could include –

- Increases in household electricity costs due to the high initial cost of generating RE
- Disputes in the community over the location of RE facilities

What are the possible scenarios for developing RE in Hong Kong?

22. In order to illustrate some of the potential implications of promoting RE as part of a sustainable development strategy for Hong Kong, we have drawn up the following broad scenarios –

Scenario I. " Business as Usual"

23. Under this scenario, we would continue to rely on fossil fuel and nuclear energy sources to meet our electricity needs. No major policy changes would be introduced. Some experimental RE facilities would be developed, but without major technological breakthroughs we would not derive a significant amount of energy from renewable sources. Some of the potential implications of this approach are –

- We would be vulnerable to potential rises in the long-term cost of electricity as global demand for fossil fuel increases (especially for cleaner fuels such as natural gas) and the availability of large stocks of fossil fuel diminishes
- We would be seen internationally as failing to make an attempt to contribute to reducing global greenhouse gas emissions from power generation
- We would be neglecting an opportunity to make a contribution to reducing environmental pollution

Scenario II. "Localised RE facilities"

24. This scenario would involve the Government making policies to encourage owners, designers and developers of buildings to install RE facilities to meet part of their in-house power demand. Power companies would provide adequate power to meet the outstanding demand of these buildings. This scenario does not preclude scenarios III and IV below. Rather, it would help make RE part of everyday life and enhance awareness of RE applications. Implications of this approach would be –

- Consumers would have a choice of paying more for "cleaner" energy to meet part of their power requirements
- As the installation of RE facilities as part of new buildings would be technically straightforward, developers would likely be willing to install such facilities if appropriate policies and incentives were in place
- Business opportunities would be created for the design, supply, installation and maintenance of RE facilities

Scenario III. "Incremental Change"

25. Under this scenario, in addition to scenario II above, the Government would make a commitment to generating a small but gradually increasing percentage of electricity from RE sources over the next 20 years. Based on the proposals in the government study, and assuming no major technological breakthroughs, the targets for energy from RE sources would be as follows –

- 1% by 2012
- 2% by 2017
- 3% by 2022

26. These targets could be reviewed periodically in the light of changing circumstances, in particular technological advancement, with the aim of ensuring that we do our best to promote RE in a practical and sustainable manner. Based on the assumption that demand for generated electric power would remain steady at about 40,000 GWh annually, the implications of this approach might be as follows –

- To meet 1% of our annual requirements solely from wind power, we would need to install about 100 wind turbines each with a capacity of 2 MW. This could take up an area of over 4,000 hectares[19]
- Using energy-from-waste, about 2% of our annual electric power needs could be provided by 2 facilities each treating 1 million tonnes of solid waste per year and requiring about 20 hectares of land
- Solar panels covering 12% of the rooftops of existing commercial and government buildings in Hong Kong, together with "solar farms" requiring 12 hectares of land could generate 0.1% of our annual electric power needs

[19] Equivalent to some 240 times the area of Victoria Park.

Scenario IV. "Ambitious Model"

27. This scenario envisages much higher targets for generating electric power from RE sources. Policy changes would need to be made to ensure the maximum scope for using RE by all. All electricity suppliers would be required to provide a proportion of their power from RE sources. Notional targets for the percentage of power to be generated from renewable sources under such an approach are –

- 2% by 2012
- 5% by 2017
- 9% by 2022
- 12% by 2027

28. On the basis of an electricity demand of 40,000 GWh annually, some of the implications of such an approach might be –

- In comparison with the previous scenarios, we would need to increase significantly the coverage of wind turbines, solar panels on buildings and solar "farms"
- We would very likely need to explore other possibilities for increasing access to RE sources, e.g., importing power from RE facilities in Mainland China

Some Key Questions

29. This chapter provides some background information on the issue of RE, with the aim of stimulating an open and inclusive debate on how to take this issue forward in the context of Hong Kong's development as a sustainable world city. To frame the debate and provide some initial guidance to stakeholders, this chapter concludes with a few questions. We appreciate that the answers to these questions could be a simple "yes" or "no". This would still be a valuable response. But we hope that they will also stimulate broader thinking and responses that will help to shape the advice that the Council for Sustainable Development will give to the Government on what needs to be done in this area to promote sustainability.

1. Should we begin to take steps to generate a certain percentage of our electricity from renewable energy sources, having due regard to ensuring that the reliability of our power supply will be maintained?
2. Bearing in mind that RE is recognised as being more expensive than fossil fuels in the short-term, how should we, as a community, meet the likely increased cost of electricity from renewable sources?
3. Should we implement measures to facilitate access for RE suppliers to the main electricity power grid?
4. Under what circumstances would you accept the location of a renewable energy facility, such as a wind farm or an energy-from-waste incineration plant (albeit equipped with the latest technology in emission reduction) in your district? Or in a country park or coastal waters?

5. Should we provide incentives or make regulations to mandate the provision of rooftop solar energy panels or other building design features that could contribute to promoting the use of RE?

6. Should we require electricity suppliers to generate a certain percentage of power from RE sources?

Further Information

30. We have tried to keep the presentation in this chapter concise and to focus on a few key points. If you would like to know more about renewable energy and the deliberations of the Support Group, you might wish to look at the website for the Sustainable Development Strategy, which is at: **<http://www.susdev.org.hk>**. The following websites also have information on this area -

- Interactive site on energy and energy efficiency by the Electrical and Mechanical Services Department *<http://www.energyland.emsd.gov.hk/eng/index.htm>*
- Air pollution and greenhouse gas inventory for Hong Kong *<http://www.epd.gov.hk/epd/english/environmentinhk/air/data/emission_inve.html>*
- Report of the Consultancy Study on potential applications of renewable energy in Hong Kong *<http://www.emsd.gov.hk/emsd/eng/sgi/re.shtml>*
- Chinese Renewable Energy Industries Association *<http://www.creia.net>*
- China New Energy Network *<http://www.newenergy.org.cn>*

4 URBAN LIVING SPACE

Introduction

Hong Kong has a relatively small amount of land to accommodate a large and growing population. To create high quality urban living space with easy access to essential services and public transport is a challenging task. It requires us not just to cater for short-term economic growth, but also to consider how best to create an urban environment that will satisfy our social needs and enhance Hong Kong's attractiveness, thereby boosting our long-term economic competitiveness.

The term "urban living space" can cover a wide range of issues related to the quality of life in the city. The Urban Living Space Support Group considers that congestion, the density of building development and the run-down appearance of many areas of Hong Kong are major factors affecting the living and working environment of citizens. We acknowledge that there are wider strategic issues, e.g., reclamation and sustainable transport planning that also influence our living space. However, at this stage, we have decided to focus on the following issues that directly impact upon our day-to-day lives –

- Balancing "urban" and New Territories-based development;
- Improving old urban neighbourhoods;
- Sustainable urban design.

We look forward to receiving your views on these points.

Peter Hills
Convenor, Urban Living Space Support Group

How can we make our urban living space more attractive and enjoyable?

Population Density and Congestion

We are one of the most densely populated cities in the world. On average, each square kilometre (km) of space in Hong Kong contains over 6,000 people. In some districts, this figure is as high as 40,000 to 50,000 people per square km. The fact that a city is densely populated does not necessarily mean that the urban living environment is unsustainable. There are certain advantages (especially in terms of access to services and amenities and the cost of providing these services) to having large numbers of people living in close proximity rather than spread out over wide areas.

2. However, the pressures of fast-growing populations, often related closely to the need to accommodate economic growth, can lead to congestion and overcrowding. This has implications not just for the natural environment, but also for our long-term economic competitiveness, our social networks and public health.

3. In Hong Kong, the average flat size is currently around 650 square feet. This represents an increase of 10% over the past ten years, and gives each person an average of approximately 200 square feet in which to live. However, despite this improvement, there are concerns in the community that the physical congestion of many building developments is compromising our public health and the general quality of life in the city.

4. To help mitigate the high density of our city's development, the Hong Kong Planning Standards and Guidelines suggest that for each 100,000 people in any district, there should be 20 hectares of public open space (in other words, about twenty square feet per person). Though there is sufficient planned open space, many districts (especially in Kowloon and on Hong Kong Island) fall far short of implementing all the planned provision. Currently, the average open space provision is 14 hectares per 100,000 people.

Urban Decay

5. Hong Kong has a large number of old commercial and residential buildings that are showing signs of decay. Many of these are clustered in specific urban districts and communities that provide poor quality housing and amenities to residents and offer few opportunities for social or economic development. The Planning Department recently conducted a survey on the conditions of domestic or composite buildings in the older parts of the urban area (e.g., Shamshuipo, Yaumatei, Western). This revealed that the condition of around one quarter of all buildings is less than satisfactory. In order to enhance the overall urban living environment, reduce public health risks and stimulate social and economic improvements, there is a need to consider what is the best way to improve these areas, whether through redevelopment or revitalisation.

City Landscape

6. One of Hong Kong's defining visual characteristics is the high-rise urban landscape. The construction of tall buildings meets functional economic needs. However, it can also have visually oppressive or even environmentally unfriendly consequences. Examples include the "canyon effect" created by clusters of tall buildings in close proximity, the obstruction of view corridors or of the "ridge line" perspective of Hong Kong's hills, and the blocking of natural air corridors and sunlight from large areas of the city.

7. Furthermore, although we have many architecturally striking buildings, there are also many buildings that fail to include features that would contribute to more sustainable management practices. We need to consider effective means to create an attractive city landscape.

How are we tackling these issues?

8. Most of our urban development is undertaken by private companies, in accordance with free market principles. The Government regulates such development by, for example, limiting the plot ratio and maximum height of developments, and stipulating requirements for open space. The Government also has a direct and active role in the development of urban living space through town planning initiatives, capital works and public housing programmes.

9. In 2001 the Planning Department began a study of our overall future development requirements. This study, known as "HK 2030", seeks to present a broad strategic vision for Hong Kong's development over the next 25 years or so. One of the directions of the HK 2030 study is "Providing a Quality Living Environment". The study looks at issues such as heritage conservation, urban design and the provision of civic amenities, as well as the use of land resources.

10. Apart from determining planning parameters and undertaking works and housing programmes, the Government has also set up the Urban Renewal Authority (URA)[20]. The URA tackles urban renewal by redeveloping dilapidated buildings, revitalising old districts at the street level, rehabilitating old buildings, and preserving buildings of historical, cultural or architectural interest in project areas. Its role in the rehabilitation of buildings and neighbourhood revitalisation is mainly related to promotion and facilitation.

11. Good urban design can contribute to an overall improvement in quality of life, including a healthy lifestyle and an attractive living environment. To promote green and innovative buildings and better living space, the Government has since 2001 given incentives for developers to provide such features as balconies, wider common corridors and communal sky gardens. A new chapter on urban design was included in the Hong Kong Planning Standards and Guidelines in November 2003, to help improve the general physical environment.

[20] The URA was established in 2001, replacing the Land Development Corporation, which was established in 1988.

Some international perspectives

Redevelopment and Revitalisation of Old Urban Neighbourhoods

12. In many large cities, problems such as poor environmental conditions and a lack of recreational or leisure facilities characterise the most densely developed areas. The focus of revitalisation in such areas is often on the need for an integrated approach to improving social, economic and environmental conditions.

13. In **Singapore**, the Government is looking at upgrading main streets in the city to improve the environment, the architecture and the commercial viability of certain areas. More "cultural" buildings – including preserved and renovated existing historical buildings – are planned, together with urban squares and extended footpaths to encourage pedestrian traffic. The tropical and Asian heritage of the city would be emphasised in the execution of these plans.

14. **Tokyo**'s urban redevelopment plans include architectural schemes that would secure open spaces, create public facilities specific to the needs of local communities and take account of the need for creativity and flexibility in areas such as plot ratios and height restrictions. A high degree of private sector finance would be involved in realising these plans.

15. In **London**'s King's Cross district, the focus is on making the area a place for business and a place for local people. Revitalisation projects include the improvement and upgrading of housing estates (by, for example, creating loft apartments and terraces), so as to improve living conditions and provide business opportunities for the community.

Sustainable Urban Design

16. The State Sustainability Strategy for **Western Australia** includes as one of its priorities "sustainable urban design". This involves a commitment to urban design that creates community-oriented city spaces, and networks, "economically facilitated-mixed" housing types and business spaces, and ecologically sensitive design. The strategy also notes that promoting sustainable urban design can encourage the creation of "knowledge economy" jobs and small businesses.

What are the options for enhancing urban living space in Hong Kong?

17. The following section considers how we might enhance our urban living space. Three possible options are outlined below. These are not mutually exclusive, and can be implemented as a combination of alternatives in different degrees.

I. More New Territories-based Development

18. Until the 1970s, most of our urban development was on the shores of Victoria Harbour, on Hong Kong Island, in Kowloon and in "New Kowloon" – stretching from Lai Chi Kok in the West to Kwun Tong in the East. In the early 1970s, about 80% of Hong Kong's population lived in these areas. The "new town" development programme saw a gradual shift of the population to the New Territories (NT). Almost half of Hong Kong's population now lives in the NT. This has helped increase the value of NT land, and has opened up new development and employment opportunities.

Figure 4.1
Urban and rural developments around Fanling

19. The new town developments in the NT generally provide a more attractive living environment than the urban areas. However, although the population density of an area such as Mong Kok is as high as 40,000 persons per square km, even in the new towns of Sha Tin and Tseung Kwan O densities are around 34,000 and 35,000 persons per square km respectively (not including green belts, conservation areas and water bodies). Rather than lower population density, the factors that make the living environment in built areas of the NT more spacious and enjoyable include –

- Co-ordinated planning;
- Provision of open space and conservation of green areas; and
- Consistency of urban design and architecture.

20. In all, only about 10% of Hong Kong's land has been built on for residential and commercial uses (see Table 4.1). Much of the NT – some 40,000 hectares outside of the Country Parks – remains undeveloped. However, a large part of this is hill country or potentially of ecological importance (e.g., wetlands or woodlands). Furthermore, under existing laws, the resumption of private land is limited to projects for a public purpose; therefore much of the land in the NT has not been made available for development.

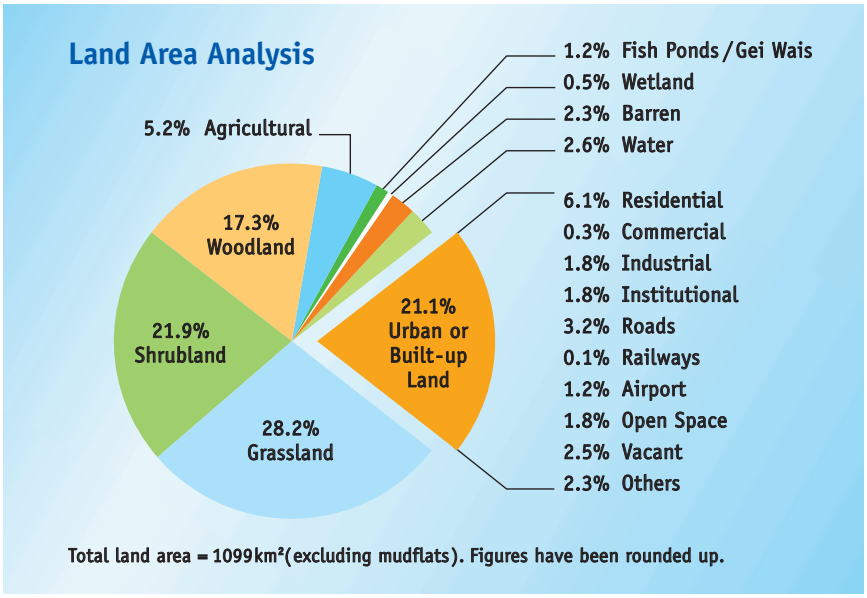

Table 4.1
Land Utilisation in Hong Kong, 2000

21. A continued shift of the development focus from the urban areas to the NT could help to reduce congestion and development densities across Hong Kong and enhance our overall urban living space. However, further large-scale development of the NT could have the following negative implications –

- An impact on the rural environment, much of which has an attractive natural landscape and diverse flora and fauna, including rare species;
- An intrusion on well-established rural communities; and
- A reduction in the availability of rural areas for recreation and tourism.

II. Greater Emphasis on Revitalisation of Old Neighbourhoods

22. In districts where residential, commercial and industrial buildings are old or decaying, people's living and working conditions are often below the standards expected of a "world city". In residential areas, the old age of many buildings, and the lack of regular maintenance and good management have resulted in dilapidation of some stock and high levels of vacancy in certain districts. The removal of manufacturing and processing operations to other parts of China has left factory premises in old industrial areas empty or under-utilised.

23. Private sector developers, as well as organisations such as the Hong Kong Housing Authority (HKHA), the Housing Society (HS) and the URA from time to time demolish old buildings to create new commercial and residential developments. This can provide a better living environment and improve social and economic prospects in affected neighbourhoods. In the last 16 years, under its Comprehensive Redevelopment Programme, the HKHA has demolished 531 old public housing blocks in order to build some 180,000 new flats for its rental clients, as well as around 2.3 million square feet of commercial space. Over the same period, the URA (together with its predecessor the Land Development Corporation) has completed 17 redevelopment projects, producing some 2,300 flats and approximately 3 million square feet of commercial space.

24. The full-scale demolition and redevelopment of old urban neighbourhoods have implications for Hong Kong's sustainability, for example –

- Demolition and re-construction create large amounts of waste material that needs to be disposed of;
- Breaking up existing communities leads to social dislocation;
- Building entirely new infrastructure has high financial and opportunity costs; and
- Where the design of a new development does not match the surrounding neighbourhoods, an area can lose its "character" and heritage.

Figure 4.2
Revitalisation and preservation at Western Market

25. Rather than demolish old buildings for redevelopment, urban living space can be improved by renovating existing buildings, upgrading local amenities and preserving built heritage. Keeping the basic infrastructure of old areas intact can help reduce sustainability problems related to redevelopment. However, revitalisation may require a significant short-term cost with little prospect of early direct financial returns, making it difficult to interest the private sector in such projects.

Some of the initial costs of revitalisation would therefore probably have to be paid by the public purse. We also recognise that the existing environment of some old districts limits the potential benefits of revitalisation, and that revitalisation might not always be a viable long-term substitute for redevelopment in enhancing urban living space.

III. Incentives for More Sustainable Urban Design

26. Sustainable building design can help minimise waste, reduce energy usage and complement the local social, physical and natural environment. The design of private buildings in Hong Kong has rarely placed a priority on the wider community interest. Rather, market forces have led us to concentrate on maximising the use of land by providing for high plot ratios and gross floor areas, and on improving the internal environment of buildings to boost marketability.

"Plot ratio" is defined as the ratio between the total gross floor area (GFA) of a building or an estate and the area of the site on which it is erected, i.e. plot ratio = total GFA / site area.

For example, Whampoa Garden has a plot ratio of about 5; Tai Koo Shing has a plot ratio of about 6; the Belcher's has a plot ratio of about 8.

27. Creating incentives for more sustainable design of individual buildings, as well as the design of whole neighbourhoods and other urban facilities could have a positive impact on urban living space and the public health conditions of a city. Well-coordinated landscape features and open space, the creation of "breezeways", "stepped" building heights that preserve existing views (for example, of the ridge line of Hong Kong's mountains), and a more attractive pedestrian environment would all contribute to a more sustainable living environment.

28. While recognising the social and environmental benefits of encouraging enhanced urban design, there may be economic implications to consider. For instance, improving living conditions by introducing measures such as increased floor-to-floor heights and sky gardens might lead to lower profits for developers or reduced land sale revenues for the Government due to the lower gross floor area to be developed. We need to consider whether we would be willing to pay such short-term financial costs in order to enhance our living environment.

Hong Kong in the 1950s | **Hong Kong today**

Figure 4.3
Changes in the city landscape of Hong Kong Island

What are the implications of these options?

29. The above paragraphs touch on some of the possible implications of the three options outlined above. The following table summarises these and some of the other potential implications of these options.

Option	Social Implications	Economic Implications	Environmental Implications
More NT Development	• Closer physical links with the Mainland. • Intrusion on rural communities. • Less pressure on urban communities.	• Enhanced value of rural land. • New development opportunities in NT. • Reduced tourism value of rural areas.	• Clearing unsightly NT land uses. • Impact on natural environment. • Fewer areas for recreation.
More Emphasis on Urban Revitalisation	• Better living environment. • Preserve social networks and "character" of old neighbourhoods.	• Substantial cost with limited scope for return. • High maintenance cost of buildings. • Enhanced value of land following revitalisation.	• Improve overall urban environment. • Less construction and demolition waste. • Scope for improved sanitary conditions, contributing to better public health.
Incentives for Sustainable Urban Design	• Contribute to higher quality living environment.	• Higher design and construction costs. • Reduced revenue from land sales.	• Improve city landscape and public health conditions.

Some Key Questions

30. The intention of this document is to provide some initial background to what we hope will be an open and inclusive debate on what should be done to ensure that our urban living space will provide us and future generations with the quality of life that will make us a sustainable world city. We conclude this chapter with some key questions on this issue. We appreciate that the answers to these questions might on the face of it be a simple "yes" or "no". That would still be a valuable response. However, we hope that the questions will also stimulate broader thinking and more substantive replies. The responses to these questions will help to shape the advice that the Council for Sustainable Development will give to the Government on what needs to be done to enhance our urban living space.

Balancing "urban" and New Territories-based Development

1. Should we concentrate new residential and commercial development in the NT, bearing in mind the possible negative impacts, in order to reduce congestion and allow for more open space in the "urban" area?

2. What types of development do you wish to see in the NT? Should we focus on developing high-rise buildings around the new towns in order to preserve more rural land? Or should we encourage more low-rise housing and commercial projects in rural areas to keep development density low?

Improving Old Urban Neighbourhoods

3. Should we impose mandatory requirements or offer economic incentives to encourage developers (including the HKHA, HS and URA) to revitalise old neighbourhoods rather than demolish them for full-scale redevelopment?

4. Should the public purse meet some of the direct initial cost of renewing old urban areas by rehabilitation, revitalisation and preservation in order to create more sustainable neighbourhoods?

Sustainable Urban Design

5. Should we impose mandatory requirements or offer incentives for sustainable building and urban design (e.g., for: maximum development height; the layout of building blocks to allow for more open space, breezeways and visual corridors; greening; and pedestrian-only streets)?

Further Information

We have tried to keep this chapter concise, while providing some useful and relevant information. If you would like to learn more about issues related to Urban Living Space, you may wish to look at the following websites, in particular, the Sustainable Development Strategy website, which includes further information and points considered by Members of the Urban Living Space Support Group.

- Sustainable Development Strategy <*http://www.susdev.org.hk*>
- Planning Department <*http://www.info.gov.hk/planning*>
- Urban Renewal Authority <*http://www.ura.org.hk*>
- "Hong Kong 2030 " Study <*http://www.info.gov.hk/hk2030*>
- Urban Design Guidelines for Hong Kong <*http://www.info.gov.hk/planning/p_study/comp_s/udg/udg_es/dig_eng/urban_cover.htm*>

5 RESPONDING TO THE DOCUMENT

This document is mainly concerned with the issues of Solid Waste Management, Renewable Energy and Urban Living Space, and their possible impact on Hong Kong's sustainable development. The choices we make in these areas will determine how we will build a better community for ourselves and for future generations.

2. When you respond to this document, we very much hope that you will bear this point in mind.

3. We welcome feedback on the issues presented here, in particular on the specific questions posed at the end of chapters 2 to 4. We also look forward to receiving further information, suggestions or questions that you might have relating to the Pilot Areas. Your views will help to shape the advice that the Council for SD will give to the Government on the way forward for sustainable policies for Hong Kong.

Channels for Response

4. In the coming months, the Council for SD will work with partner organisations from various sectors to implement a programme of events aimed at encouraging people in the community to comment on the issues presented in this document. We will reach out to a wide group of stakeholders and concerned citizens, including district-based organizations, students, business and civil sector groups.

5. As well as coordinating public events, we have an open and interactive channel of communication through the SD Strategy website at www.susdev.org.hk. Through this website, we will provide a regular update on events, host an interactive "chat-room" on the engagement process and provide a regular electronic bulletin on related issues.

6. We would also be glad to receive comments by post, through the office of the Council Secretariat at –

The Sustainable Development Unit
M/Floor, Murray Building
Garden Road
Central.

The deadline for the submission of views is **12 November 2004**.

Can my views make a difference?

7. In responding to this document, whether through participation in public hearings and workshops, on-line discussion or by sending in your written comments, you will be contributing to the sustainable future of our city. One of the most important parts of the process of building any strategy for sustainability is the partnership between all sectors of society in debating the issues and working towards a consensus on the way forward. In this respect, the choices that you make when commenting on the issues raised here will make a real difference.

8. This engagement process represents a new way of involving the community in shaping government policies. We hope that it will provide a platform for a wide range of ideas and suggestions from all sectors of our society. The success of this initiative depends largely on the response that we get to this document. We urge stakeholders to join the discussion on the choices that we need to make to ensure a sustainable Hong Kong for the benefit of this and future generations.

Council for Sustainable Development
July 2004

Annex I

Terms of Reference and Membership of the Council for Sustainable Development

Terms of reference –

(a) To advise the Government on the priority areas it should address in promoting sustainable development;

(b) To advise on the preparation of a sustainable development strategy for Hong Kong that will integrate economic, social and environmental perspectives;

(c) To facilitate community participation in the promotion of sustainable development in Hong Kong through various means, including the award of grants from the Sustainable Development Fund; and

(d) To promote public awareness and understanding of the principles of sustainable development.

Chairman:	Chief Secretary for Administration
Vice-chairman:	Dr Edgar Cheng, GBS, JP
Members:	Dr Lily Chiang Ms Choy So-yuk Mr Barrie Cook Ms Christine Fang, JP Mr Hans Michael Jebsen, BBS Mr Thomas Kwok, JP Professor Lam Kin-che, JP Mr Andrew Liao, SBS, SC, JP Ir Otto Poon, BBS Mr Tai Hay-lap, BBS, JP Mr Tik Chi-yuen, JP Professor Tsui Lap-chee Secretary for Economic Development and Labour Secretary for the Environment, Transport and Works Secretary for Health, Welfare and Food Secretary for Housing, Planning and Lands

Annex II

Terms of Reference and Membership of the Strategy Sub-committee

Terms of reference –

(a) To assist the Council for Sustainable Development with the formulation of a Sustainable Development Strategy for Hong Kong;

(b) To engage stakeholders and the community and implement a consultation programme as agreed by the Council for Sustainable Development with a view to ensuring that the Sustainable Development Strategy is inclusive and widely accepted by the community; and

(c) To report regularly to the Council for Sustainable Development on progress with the formulation of the Sustainable Development Strategy.

Chairman:	Dr Edgar Cheng, GBS, JP
Members:	Dr Lily Chiang
	Ms Choy So-yuk
	Professor Lam Kin-che, JP
	Ir Otto Poon, BBS
	Mr Tik Chi-yuen, JP
	Secretary for the Environment, Transport and Works
	Ms Anne Copeland *
	Professor Peter Hills *
	Mr Albert Lai *
	Dr Joseph Lian, JP *
	Mr Chandran Nair *
	Mr Ng Shui-lai, BBS, JP *
	Ms Edith Terry *
	Mr Peter T S Wong, JP *

* Co-opted members

Annex III

Terms of Reference and Membership of the Support Groups

Terms of reference –

(a) Identify key issues relevant to Hong Kong's long-term sustainability in the Pilot Area, with appropriate reference to international experience and best practice.

(b) Collect relevant background information (with reference to local and international experience) and compile an "Invitation and Response" document.

(c) Design and implement an engagement process for public discussion of the "Invitation and Response" document and related issues.

(d) Present the "Invitation and Response" document to the public and encourage and facilitate interactive discussion by stakeholders with a view to building consensus among major groups.

(e) Receive and collate responses from stakeholders, with a view to making proposals to the Council for Sustainable Development.

Support Group on Solid Waste Management

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Professor Sunny Kwong
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