

The background of the slide is a nighttime photograph of the Hong Kong skyline. The image shows numerous skyscrapers illuminated with various lights, including yellow, blue, and red. The Victoria Harbour is visible in the foreground, with some boats and lights reflecting on the water. The overall scene is a vibrant and dense urban landscape.

Workshop on Sustainable Development

Sustainable Development Division

Environment Bureau

Tom T.H. TAM / CHOW Cheuk Wai

18 January 2018



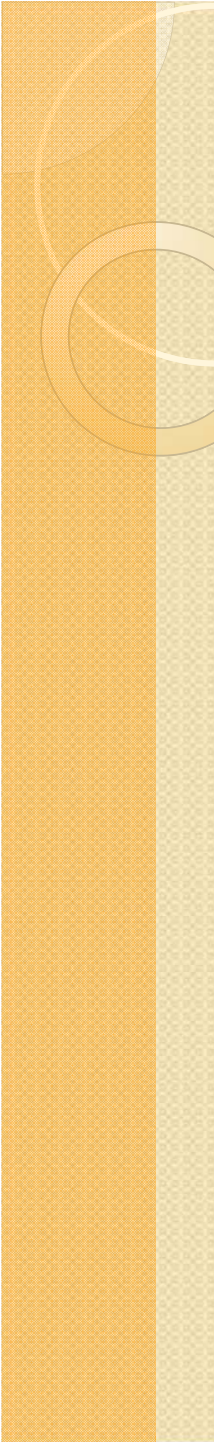
Rundown

- I. Introduction to Sustainable Development,
Sustainable Development in Hong Kong and
Urban Design in Hong Kong (Tom TAM, ENB)
- II. Interactive Game (CHOW Cheuk Wai, ENB)
- III. A Sustainable Urban Design Case Study in
South Korea (CHOW Cheuk Wai, ENB)



Introduction

1. What is Sustainable Development ?
2. Sustainable Development in Hong Kong
3. Urban Design in Hong Kong



I. What is Sustainable Development (SD)? 什麼是可持續發展？

Some General SD Issues – Limited Natural Resources

一些可持續發展的課題 --- 有限自然資源

Humans are exploiting natural resources to the limit to satisfy their needs
人類為滿足自己的慾望而盡用自然資源

Water
Resources
水資源



VIDEO

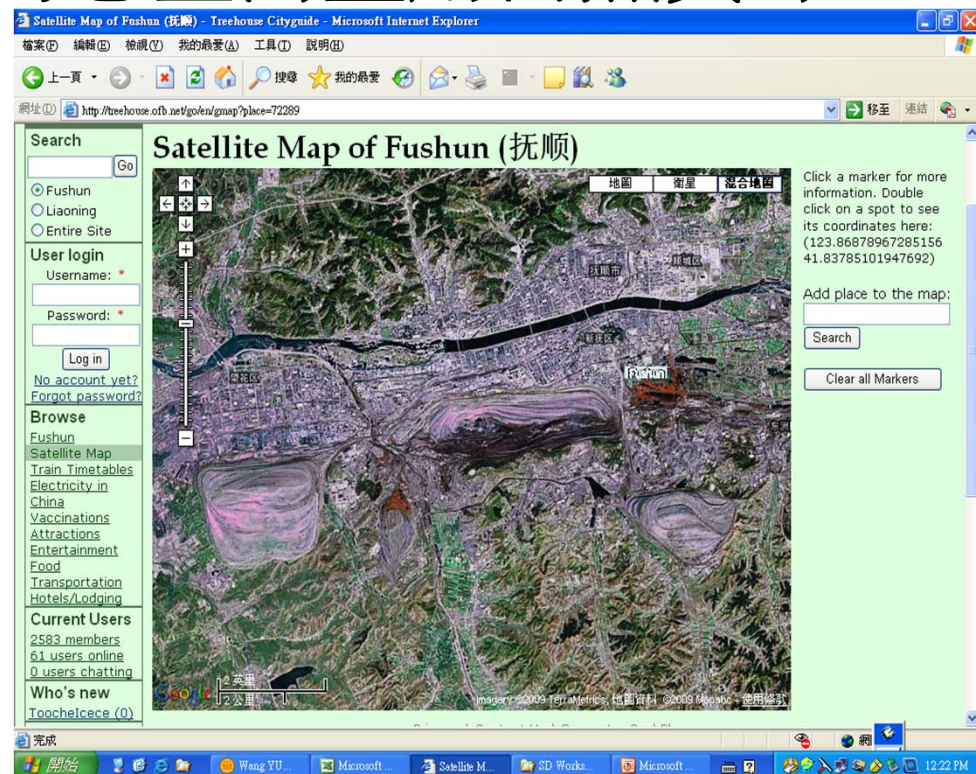


Some General SD Issues – Limited Natural Resources

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Humans are exploiting natural resources to the limit to satisfy their needs
人類為滿足自己的慾望而盡用自然資源

Land
Resources
土地資源

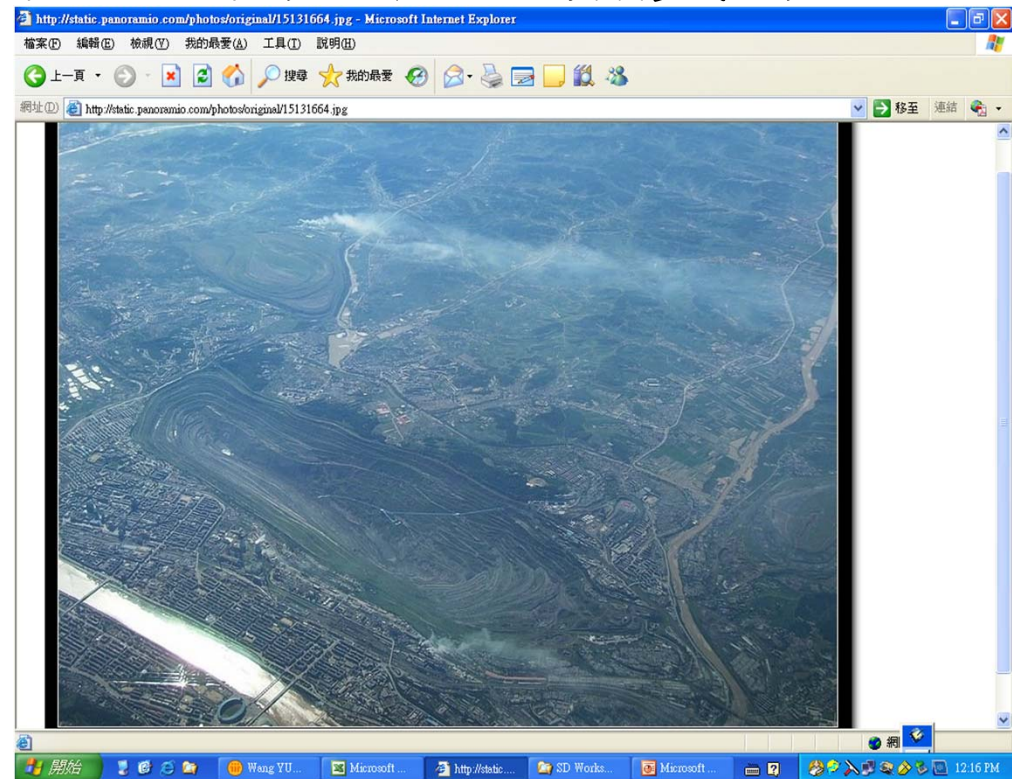


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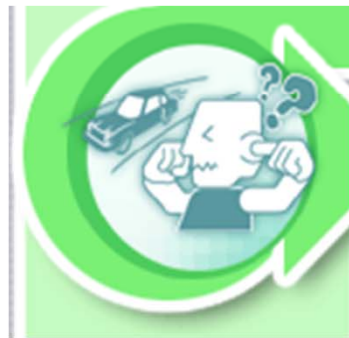
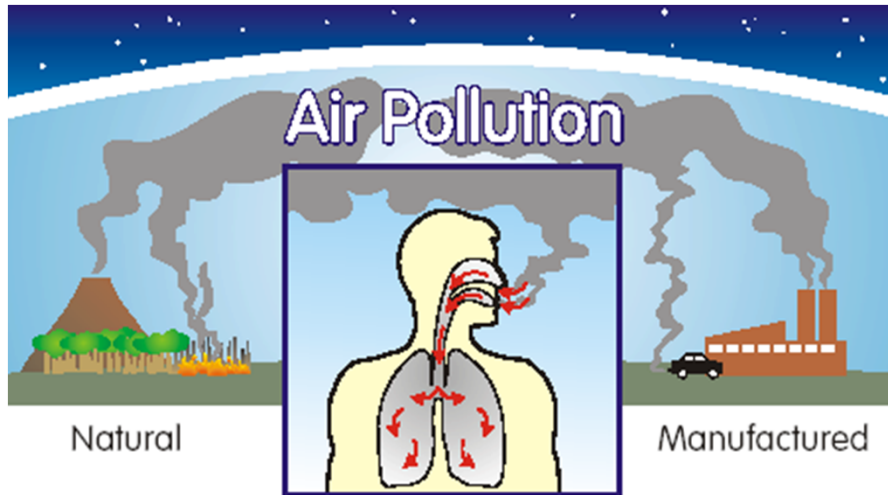
Fuel
Resources
(e.g. Coal)

燃料資源
(例如：煤)



Some General SD Issues Pollutions

一些可持續發展的課題 --- 環境污染



Some General SD Issues Greenhouse Gas Emissions Climate Change

一些可持續發展的課題 --- 溫室氣體排放 --- 氣候變化





Some General SD Issues ... Greenhouse Gas
Emissions ... Climate Change

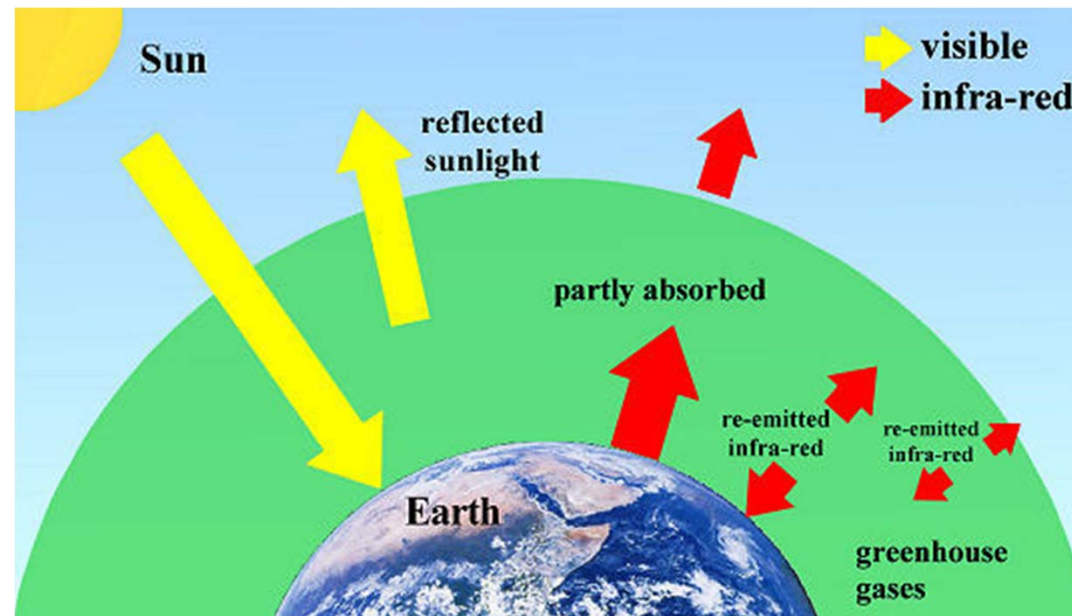
一些可持續發展的課題 --- 溫室氣體排放 --- 氣候
變化

There will be no winter in Hong Kong....

香港將再沒有冬天.....

Some General SD Issues Greenhouse Gas Emissions Climate Change

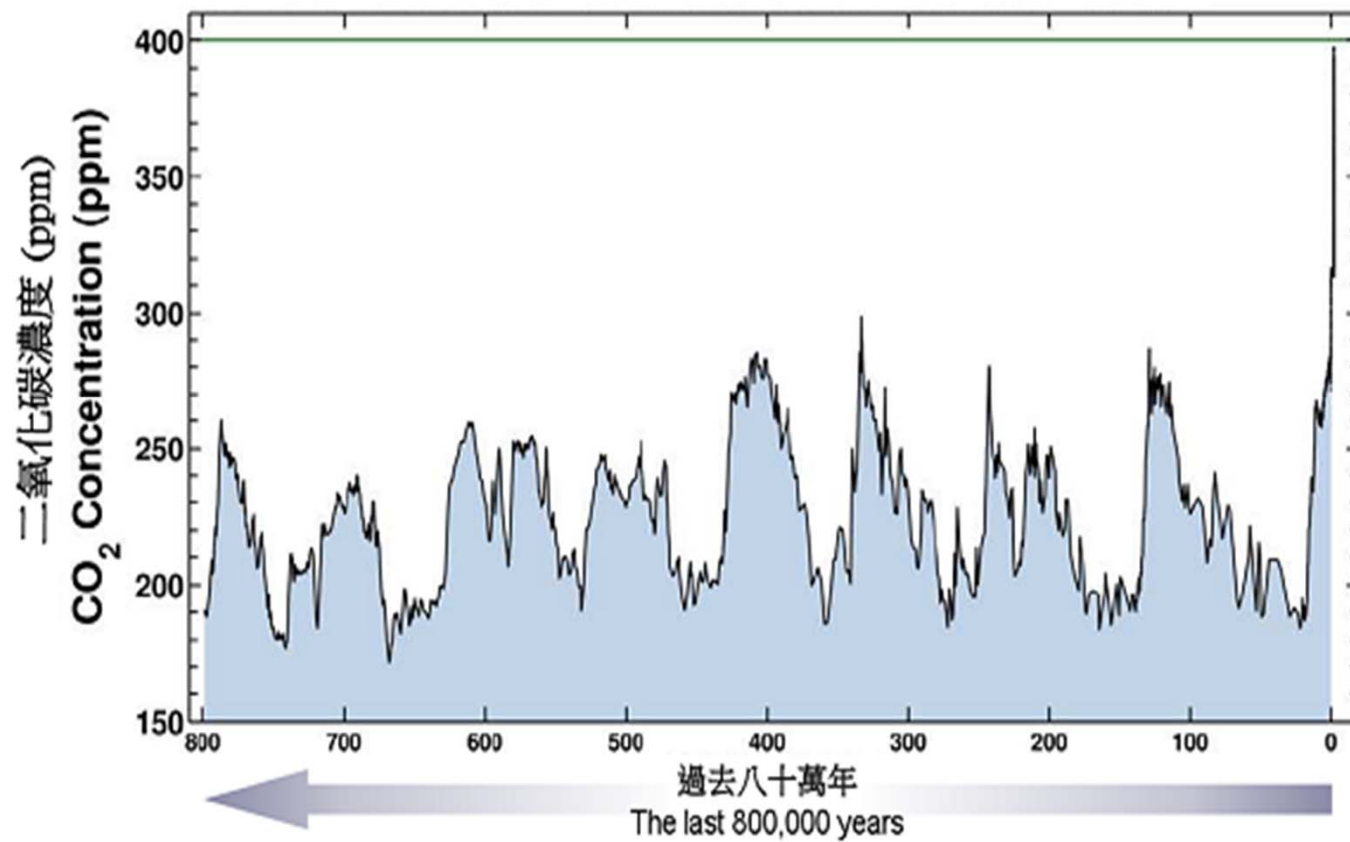
一些可持續發展的課題 --- 溫室氣體排放 --- 氣候變化



Courtesy : Hong Kong Observatory

Some General SD Issues – Greenhouse Gas Emissions

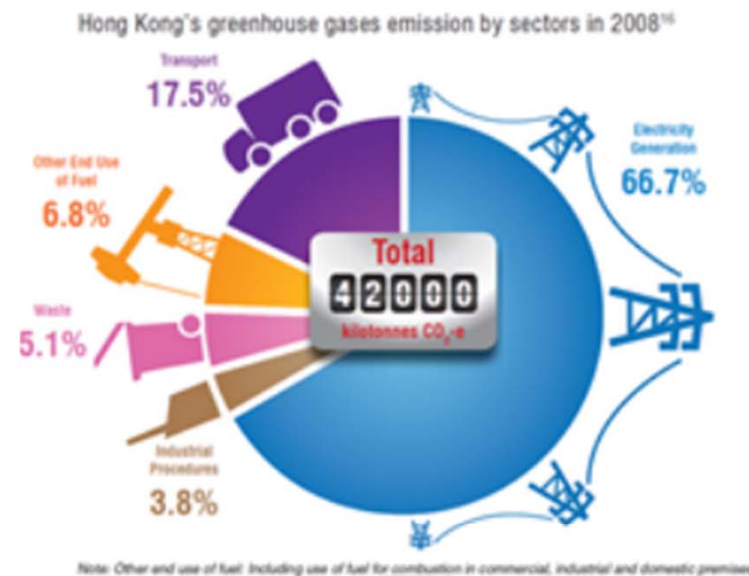
一些可持續發展的課題 --- 溫室氣體排放



Courtesy : Hong Kong Observatory

Some General SD Issues – Greenhouse Gas Emissions

一些可持續發展的課題 --- 溫室氣體排放



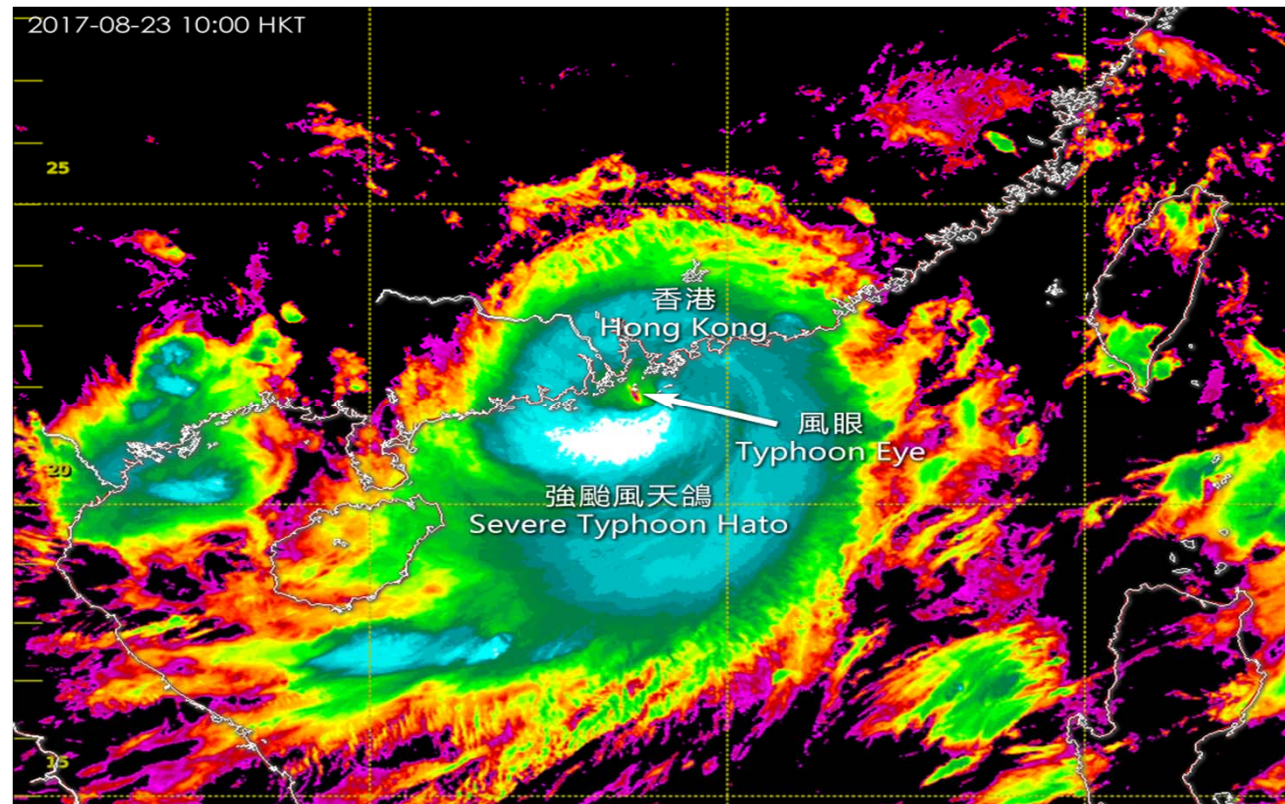
Hong Kong's electricity consumption by sectors in 2008¹⁸



Some General SD issues – Greenhouse Gas Emissions – Extreme Weather

一些可持續發展的課題

– 溫室氣體 – 極端天氣



(Source: HKO)

Some General SD issues – Greenhouse Gas Emissions – Extreme Weather

一些可持續發展的課題

– 溫室氣體 – 極端天氣



(Source: HKO)



Some General SD Issues What resources do Hong Kong possess?

一些可持續發展的課題 --- 香港擁有什么資源？

Some General SD Issues Natural Resources in HK Biodiversity

一些可持續發展的課題 --- 自然資源 --- 生物多樣化

Green Assets in Hong Kong



Some General SD Issues Natural Resources in HK Biodiversity

一些可持續發展的課題 --- 自然資源 --- 生物多樣化





Some General SD Issues
Resources/Capital Other than
Environment....

一些可持續發展的課題 --- 除了環境外
有什麼資源？

Some General SD Issues Human Resources/Capital.....Employment Rate

一些可持續發展的課題 ---人力資源 ---就業率



Some General SD Issues Leisure and Cultural Vibrancy (Social Capital)

一些可持續發展的課題 --- 消閒及文化活動
(社會資源)



Some General SD Issues ...

Living Environment

一些可持續發展的課題 --- 居住質素



Some General SD Issues Social Cohesion



I. What is Sustainable Development? 什麼是可持續發展？

❖ “.....development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- “既能滿足我們現今的需求，又不損害子孫後代去滿足他們需求的能力”的一個發展模式

(“Our Common Future”, World Commission on Environment and Development, 1987)

(《我們的共同未來》，聯合國環境與發展委員會，一九八七年)



What is Sustainable Development ?

什麼是可持續發展？

Sustainability Development (SD)

可持續發展

= ξ (needs for human development forever \rightarrow)

(Concept 1)

= ξ (人類長遠發展需要 \rightarrow)

(概念 1)

= ξ (Natural Resources, Ecological Resources, Economic Growth, Human Capital and Social Capital, ...)

= ξ (自然資源、生態資源、經濟增長、人力資源、社會資源....)

= ξ (Environment, Economy, Society)

(Concept 2)

= ξ (環境、經濟、社會)

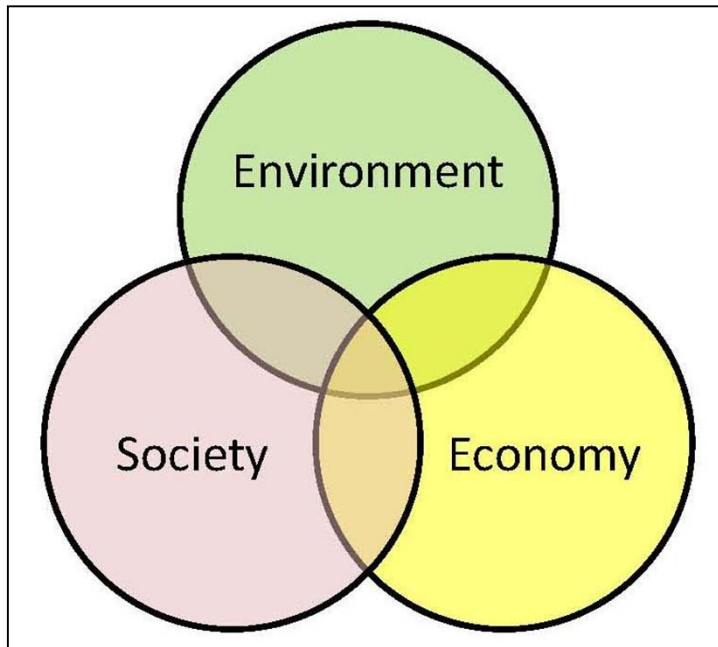
(概念2)

What is Sustainable Development?

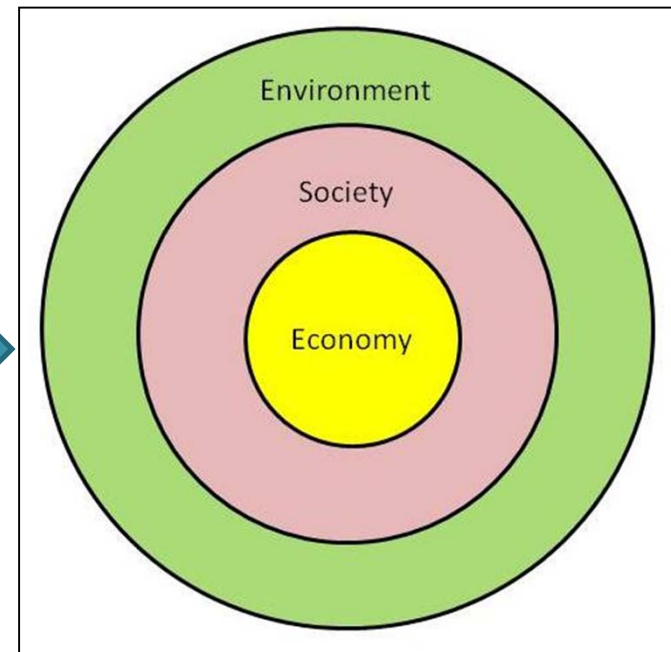
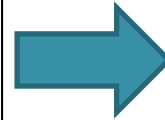
什麼是可持續發展？

Development in SD conceptual models

可持續發展的概念模型的演變



- The common “three-ring” model of SD
- A compromise of the 3 spheres
- 常見的「三環」概念模型
- 三者間的協調



- The “nested” model of SD
- Emphasis on interrelationship
- 「鳥巢」概念模型
- 強調三者間關係



Sustainable Development – A Historical Account

可持續發展歷史

Sustainable Development

Our Common Future
WCED, 1987

《我們的共同未來》
聯合國環境與發展委員會, 1987

Integration of
the social &
economic
dimensions of
sustainability

IUCN, 1980
國際自然保護同盟, 1980

Analyses of the
link between
environment and
development

UNCHE, 1972
聯合國人類環境會議, 1972

Recognition of
environmental
problems

Global
blueprint
for SD

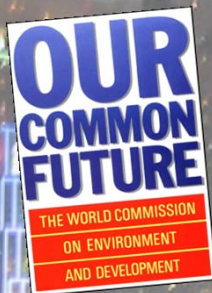
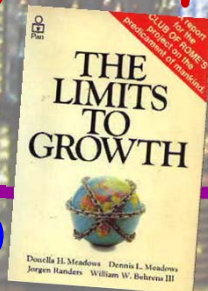
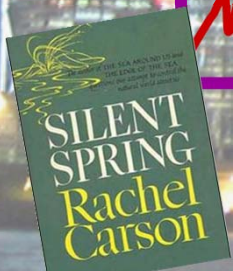
Agenda 21
Earth Summit, 1992
廿一世紀可持續發展
地球高峯會, 1992

Johannesburg, 2002
約翰內斯堡, 2002

World Summit
on SD (R+10)
reinvigorate
political
commitment

Rio de Janeiro, 2012
里約熱內盧, 2012

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70

80

90

2000

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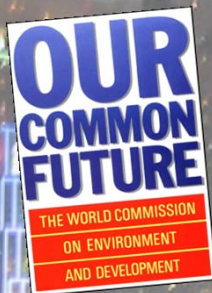
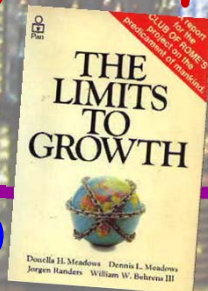
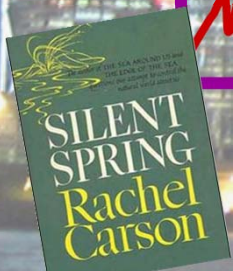
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Agenda 21 urges nations to...

廿一世紀議程促進各國

- ✓ Harmonize the various sectoral **economic**, **social & environmental** policies and plans
- ✓ 協調各經濟、社會及環境政策及計劃
- ✓ Ensure **socially** responsible **economic** development while protecting the resource base & the **environment**
- ✓ 在有效利用資源、保護環境和秉承社會責任的前題下發展經濟
- ✓ Facilitate widest possible participation
- ✓ 擴大公眾參與



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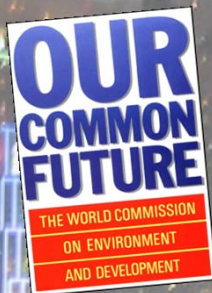
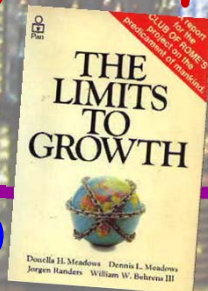
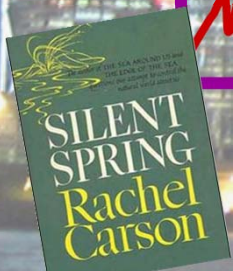
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2030 Agenda for Sustainable Development, United Nations

At the UN Sustainable Development Summit on 25 September 2015, world leaders adopted the 2030 **Agenda for Sustainable Development** which includes a set of 17 Sustainable Development Goals (SDGs) and the associated 169 targets to end the poverty, fight inequity and injustice, and tackle climate change by 2030.

2030 Agenda for Sustainable Development, United Nations

The 17 goals in 2030 Agenda

1. End poverty in all its form
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build **resilient infrastructure**. Promote inclusive and sustainable industrialisation and foster innovation
10. Reduce inequality within and among countries
11. Make **cities inclusive, safe, resilient** and sustainable consumption and production patterns
12. Ensure sustainable consumption and production patterns

Urban Design Case I – Resilient City

Resilient city – River Training Works

The usual capacity of a natural river is roughly sufficient only to meet a biennial flood. In order to increase river capacity to meet the flood under design extreme events, the river needs to be trained by straightening, widening, deepening and provision of linings. The flooding risks in most of the flood prone areas have been significantly reduced upon the completion of river training works at Shenzhen River, Ng Tung River, Sheung Yue River, Shan Pui River, Kam Tin River and Ping Yuen River. **(Source:DSD)**



Widening of Kam Tin River.



Widening at Liu Pok of Shenzhen River

Urban Design Case I – Resilient City

完善的基礎設施 (resilient city)

Stormwater storage is a common stormwater management approach in controlling the quantity of stormwater runoff. It works on the principle of temporarily storing a portion of the surface runoff coming from the upstream and allowing a limited flow to the downstream catchment. In this way, the flow rate is controlled within the capacity of the downstream drainage system, thus relieving the burden of downstream drainage system.

(Source: DSD)



Tai Hang Tung
stormwater storage tank

2030 Agenda for Sustainable Development, United Nations

The 17 goals in 2030 Agenda

- 13. Take urgent actions to combat climate change and its impacts.
- 14. Conserve and sustainable use the oceans, seas and marine resources for sustainable development
- 15. Protect, restore and promote sustainable use of terrestrial ecosystem, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
- 16. Promote peaceful and inclusive societies sustainable development
- 17. Strengthen the means of implementation and revitalise the global partnership for sustainable development

2030 Agenda for Sustainable Development, United Nations

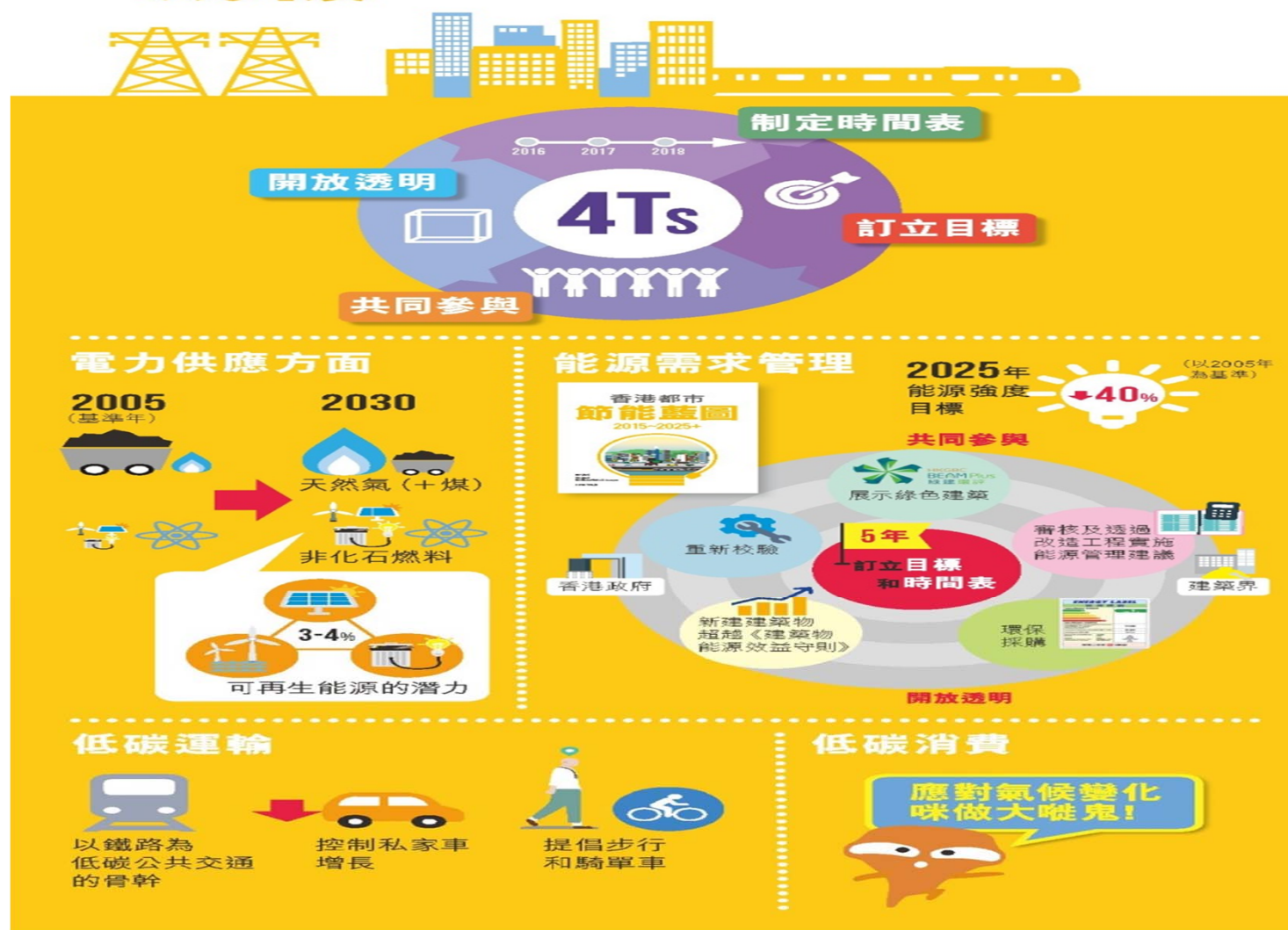
Examples of Climate Change Mitigation Measures

- *Renewable energy technologies*
- *Energy saving technologies*
 - Lighting system
 - Air-conditioning (e.g district cooling system) and ventilating system
 - Lift and escalator
- *Transportation*
 - Adopt electric or hybrid vehicles, or use fuel efficient vehicle
 - Reliance on public transportation
 - Vehicle share
 - Promotion of walking and cycling
- *Waste reduction measures*
- *Tree planting and greening to enhance cooling effect*
- *Use water saving devices*
- *Implementation of rainwater harvesting and grey water* recycling system*

2030 Agenda for Sustainable Development, United Nations

Climate Change Mitigation Measures

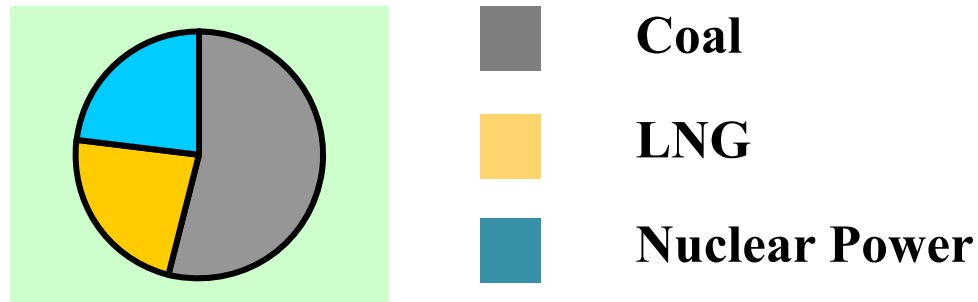
減緩



Urban Design Case I – Resilient City

Climate Change Mitigation Measures – Change of Fuel Mix

Fuel Mix of Electricity Generation in Hong Kong





2. Sustainable Development in Hong Kong 香港的可持續發展

SD Timeline of Hong Kong

HK Dimension

1980/83/88 – Ordinances on Waste Disposal, Water Pollution, Air Pollution, & Noise Pollution

1989 – White Paper on Pollution

1991/93/96 – Reviews on White Paper

1997 – SUSDEV 21

1998 – EIAO

1999– Policy Address



Int'l SD Milestone

1980 World Conservation Strategy, IUCN

**1987 – Brundtland Report, WCED
(Definition on SD)**

1992 – Agenda 21, UNCED

1997 – Rio plus 5 NSDS, Kyoto Protocol

Commission of the “SUSDEV 21” Study 展開「二十一世紀可持續發展」研究

In September 1997, the Planning Department commissioned the “Study on Sustainable Development (SD) for the 21st Century in Hong Kong (SUSDEV 21)” which was primarily aimed at introducing the concept of sustainability into decision making.

在1997年9月，規劃署開展了「二十一世紀可持續發展」研究，主要旨在把可持續發展概念引入決策過程中。

1999 Policy Address

1999年施政報告

In **1999 Policy Address**, the Chief Executive made it clear sustainable development means

- finding ways to increase prosperity and improve quality of life while reducing overall pollution and waste
- meeting our own needs and aspirations without doing damage to the prospect of future generations; and
- reducing the environmental burden we put on neighbours and helping to preserve common resources.

在**1999年施政報告**中，當時特首說明香港的可持續發展，其意義為

- 在追求經濟富裕、生活改善的同時，減少污染和浪費；
- 在滿足我們自己各種需要與期望的同時，不損害子孫後代的福祉；以及
- 減少對鄰近區域造成環境負擔，協力保護共同擁有的資源。

The “SUSDEV 21” Study

「二十一世紀可持續發展」研究

In August 2000, the study recommended –

- the establishment of Sustainable Development Unit (now [Sustainable Development Division](#))
- the adoption of a structured discipline by all Government bureaux and departments to consider the environmental, social and economic implications of new policy proposals and programmes. This had led to the introduction of the [sustainability assessment](#) system within the Government in 2002;
- the establishment of [Council for Sustainable Development](#); and
- public [consultations and awareness](#) raising programmes.

在2000年8月，研究主要建議包括

- 成立[可持續發展科](#)。
- 所有政府政策局及部門部利用一個[可持續發展評估](#)系統，去考慮新的政策建議及項目對環境，社會及經濟各方面的影響(其後自2002年起)。
- 成立[可持續發展委員會](#)。
- 籌辦[公眾諮詢](#)及提升[公眾意識](#)的項目。

The Establishment of SDU (now SDD)

可持續發展科成立

In April 2001, the Sustainable Development Unit (SDU) (now **Sustainable Development Division (SDD)**) was established. Its responsibilities are as follows:

- (A) Policy matters in relation to Government **sustainability assessment system**
- (B) Secretariat of the **Council** for Sustainable Development
- (C) Policies regarding Sustainable Development Fund / **publicity and educational programmes** related to sustainable development

2001年4月可持續發展科成立。可持續發展科職責如下：

- (A) 有關政府實施**可持續發展評估制度**的政策事宜
- (B) 可持續發展**委員會**的秘書處
- (C) 有關可持續發展基金的政策事宜 / 可持續發展的**宣傳及教育**項目



2A. Sustainability Assessment in Hong Kong

2A.香港的可持續發展評估

Sustainability Assessment (SA)

Under the [sustainability assessment system](#), all bureaux and departments are required to

- carry out sustainability assessments of strategic initiatives and policy programmes which may bring noticeable or persistent implications on the economic, environmental and social conditions of Hong Kong; and
- include in their submissions to the Executive Council (ExCo) and / or the Chief Secretary's Committee (now the Policy Committee) the sustainability findings or results of their proposals with effect from April 2002.

根據[可持續發展評估制度](#)，所有決策局和部門均須要：

- 對於有可能對香港經濟、環境及社會帶來明顯或持久影響的新策略性措施或政策項目，進行可持續發展評估；及
- 由二零零二年四月起在提交予行政會議和／或政務司司長委員會(現為政策委員會)的文件內，闡述就有關建議進行可持續發展評估的結果

Guiding Principles of Sustainable Development for Hong Kong

香港可持續發展的指導性準則

Economy 經濟



Health & Hygiene 健康與衛生



Natural Resources 自然資源



Society & Social Infrastructure 社會及基礎設施



Biodiversity 生物多樣化



Leisure & Cultural Vibrancy 消閒及文化活動



Environmental Quality 環境質素



Mobility 交通運輸

50 parameters and checklist questions under
the **8** guiding principles
8 個指導性準則下的 **50** 個參數和清單問題

Eight Guiding Principles for SA

“Do you live in a sustainable manner?”

- Economy (經濟) – Did you use local products in the past month?
- Health and Hygiene (健康與衛生) – Do you do sports frequently?
- Natural Resources (自然資源) – Have you ever deferred your plan to renew electronic appliances to reduce e-waste ?
- Society and Social Infrastructure (社會及基礎設施) – Did you do charity work recently not years ago ?
- Biodiversity (生物多樣化) – Did you hike in the countryside in the past year ?
- Leisure and Cultural Vibrancy (消閒及文化活動) – Did you visit local museums / attend local concerts in the past year ?
- Environmental Quality (環境質素) – Have you ever adopted alternative transport modes to avoid air travel in a bid to reduce GHG emissions ?
- Mobility (交通運輸) – Are you a public transport commuter?

可持續發展評估的八項準則

“您的生活模式是否合乎可持續發展?”

- Economy (經濟) – 在過去一個月有否購買本地生產產品?
- Health and Hygiene (健康與衛生) – 您是否經常做運動?
- Natural Resources (自然資源) – 您曾否為了減少電子廢物而延遲計劃購買電子產品?
- Society and Social Infrastructure (社會及基礎設施) – 您最近有否參與義務工作?
- Biodiversity (生物多樣化) – 在過去一年您有否在郊野遠足?
- Leisure and Cultural Vibrancy (消閒及文化活動) – 在過去一年您有否參觀過本港的博物館或出席本港的音樂會?
- Environmental Quality (環境質素) – 您曾否為減少溫室氣體排放而不乘飛機改用其他交通工具?
- Mobility (交通運輸) – 您是否公共交通工具常客?

Guiding Principles of Sustainable Development for Hong Kong

香港可持續發展的指導性準則

Economy 經濟



Health & Hygiene 健康與衛生



Natural Resources 自然資源



Society & Social Infrastructure 社會及基礎設施



Biodiversity 生物多樣化



Leisure & Cultural Vibrancy 消閒及文化活動



Environmental Quality 環境質素



Mobility 交通運輸

50 parameters and checklist questions under
the **8** guiding principles
8 個指導性準則下的 **50** 個參數和清單問題



2B. The Council for Sustainable Development 可持續發展委員會

2B. Establishment of the Council for Sustainable Development (SDC)

可持續發展委員會成立

The **terms of references** of the Council for Sustainable Development Council (SDC) are:

- to advise the Government on the priority areas it should address in promoting sustainable development;
- to advise on the preparation of a sustainable development strategy for Hong Kong that will integrate economic, social and environmental perspectives;
- 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
- to promote public awareness and understanding of the principles of sustainable development.

可持續發展委員的**職權範圍**是：

- 就推動可持續發展的優先範疇向政府提供意見；
- 就為香港籌劃一套融合經濟、社會和環境因素的可持續發展策略提供意見；
- 透過包括可持續發展基金的撥款在內的不同渠道，鼓勵社區參與，以推動香港的可持續發展；以及
- 增進大眾對可持續發展原則的認識和了解。

2004 First Public Engagement Process

2004年第一次公眾參與過程

Making Choices for Our Future

- Municipal Waste
- Renewable Energy
- Urban Living Space

為我們的未來
作出抉擇

- 都市廢物
- 再生能源
- 城市生活空間



2006 Second Public Engagement Process

2006年第二次公眾參與過程

Population Policy
為可持續發展
提升人口潛力



2007 Third Public Engagement Process

2007年第三次公眾參與過程

Better Air
Quality
未來空氣
今日靠你



2009 Fourth Public Engagement Process

2009年第四次公眾參與過程

Sustainable Built
Environment
優化建築設計
締造可持續建築環境



2012 Fifth Public Engagement Process

2012年第五次公眾參與過程

Combating Climate
Change

紓緩氣候變化：
從樓宇節能減排開始



2013 Sixth Public Engagement Process

2013年第六次公眾參與過程

Municipal Solid Waste Charging 都市固體廢物收費



2016年第七次公眾參與過程

A circular illustration of the Earth surrounded by various food items and people. Inside the Earth circle are several smiling faces of different ages and ethnicities. Surrounding the Earth are a chicken, a tree, a stool, a cow, a bottle of milk, a fish, a bowl of rice, a blue cup, a bunch of grapes, and a piece of sushi.



2C. Sustainable Development Fund / Publicity and Educational Programmes 可持續發展基金 / 宣傳及教育

Other Promotion Work

其他推廣工作

Sustainable Development Fund

- \$100 million set up in 2003 to provide financial support for initiatives that will —
 - promote public understanding of the concept and principles of SD
 - encourage the public to put the concept of SD into practice
 - raise public awareness of SD

可持續發展基金

- 2003年撥款一億元成立, 資助能達到以下目標的項目 -
 - 向市民宣傳可持續發展概念及原則
 - 鼓勵市民實踐可持續發展原則
 - 加深市民對可持續發展概念的認識



3. Urban Design in Hong Kong 香港的城市設計

3. What is Urban Design ?

Urban design is the process of designing and shaping cities, towns and villages. Whereas architecture focuses on individual buildings, urban design address the larger scale of groups of buildings, of streets and public spaces, whole neighborhoods and districts, and entire cities, to make urban areas functional, attractive, and **sustainable**.

Urban design is an inter-disciplinary subject that unites all the built environment professions, including urban planning, landscape architecture, architecture, civil and municipal engineering.

(Wikipedia)

3. What is Urban Design ?

Topics in Textbook

Part 1 – Background

1. People and Place
2. Urban Design Traditions

Part 2 - Content

1. The Physical Environment
2. Human Activities
3. Connections

Part 3 - Principles

6. Design
7. Change
8. Organisation

Part 4 – Processes

9. Rules
10. Tools
11. Techniques

Part 5 - Strategies

12. Strategies

(Michael Dobbins, Urban Design and People)



Urban Design Case I – Resilient City

VIDEO





Urban Design Case I – Resilient City

Urban Design Case I – Resilient City

Resilient city – River Training Works

The usual capacity of a natural river is roughly sufficient only to meet a biennial flood. In order to increase river capacity to meet the flood under design extreme events, the river needs to be trained by straightening, widening, deepening and provision of linings. The flooding risks in most of the flood prone areas have been significantly reduced upon the completion of river training works at Shenzhen River, Ng Tung River, Sheung Yue River, Shan Pui River, Kam Tin River and Ping Yuen River. **(Source:DSD)**



Widening of Kam Tin River.



Widening at Liu Pok of Shenzhen River

Urban Design Case I – Resilient City

完善的基礎設施 (resilient city)

Stormwater storage is a common stormwater management approach in controlling the quantity of stormwater runoff. It works on the principle of temporarily storing a portion of the surface runoff coming from the upstream and allowing a limited flow to the downstream catchment. In this way, the flow rate is controlled within the capacity of the downstream drainage system, thus relieving the burden of downstream drainage system.

(Source: DSD)



Tai Hang Tung
stormwater storage tank

Urban Design Case I – Resilient City

Resilient city – Power Supply

CLP completed the reinforcement work for overhead cables in 2016. The 400KV pylons are able to withstand gust of super typhoon reaching 300km/hour and to prevent damage by lightning. CLP cooperated with HKO using computer to predict the water levels at the eleven substations of 132KV or above. CLP also adopted resilient measures such as cable inlet enclosure, water gate, pumps, alarms, etc. All the substations are able to withstand the flooding of 1 event in 200 years caused by super typhoons.

HKE advised that during the on-slaughter of Typhoon HATO, power supply of HKE normally operated. This is mainly because its power supply network consists of over 6,200 km of underground and marine cables not vulnerable to severe weather. ,

(Translation from Tai Kung News, 28 August 2017)

Urban Design Case I – Resilient City

Resilient city – Power Supply

Fuel Mix of Electricity Generation in Hong Kong



Urban Design Case I – Resilient City

Resilient city – Water Supply in Hong Kong

1. Imported water from Dongjiang
2. Rainwater in reservoirs
3. Seawater for toilet flushing
4. Desalinated water
5. Reclaimed water and
6. Grey water reuse and rainwater harvesting

(Source : WSD)

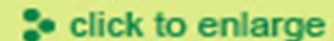
Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案 2 ---啟德可持續發展城市設計

Six Major Spheres of a Smart City

- **Smart Economy** (high speed communication network, extensive adoption of e-commerce, and promotion of innovation and entrepreneurship)
- **Smart Mobility** (real time traffic monitoring system, efficient checking of logistic freights, and **effective mode of public transport (1)**)
- **Smart Environment** (**sustainable urban planning (2)**, sustainable use of resources, **construction and management of green and smart buildings(3)**)
- **Smart People** (network usage, general ICT education and nurturing an ICT savvy workforce)
- **Smart Living** (accessible information and to enhance quality of life with respect to e.g. cultural activities and health services)
- **Smart Government** (integrated and connected public services)

(Central Policy Unit, 2015)

Clustering the bulk of development around mass transit railway stations in HK



Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案 2 ---啟德可持續發展城市設計

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(Central Policy Unit, 2015)

Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案2 --- 啟德可持續發展城市設計

(2) Sustainable Urban Planning / Design Homes in Park

- To extend homes out to the park via family-oriented park-like environment
- Estate road located in the outer fringe to create a vehicular free zone centrally (enhancing walkability)



Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

(2) Sustainable Urban Planning / Design Microclimate Study

- Setting out of wings of blocks adjusted to facilitate better air quality
- Air velocity where identified to be low have been enhanced via design modification



Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

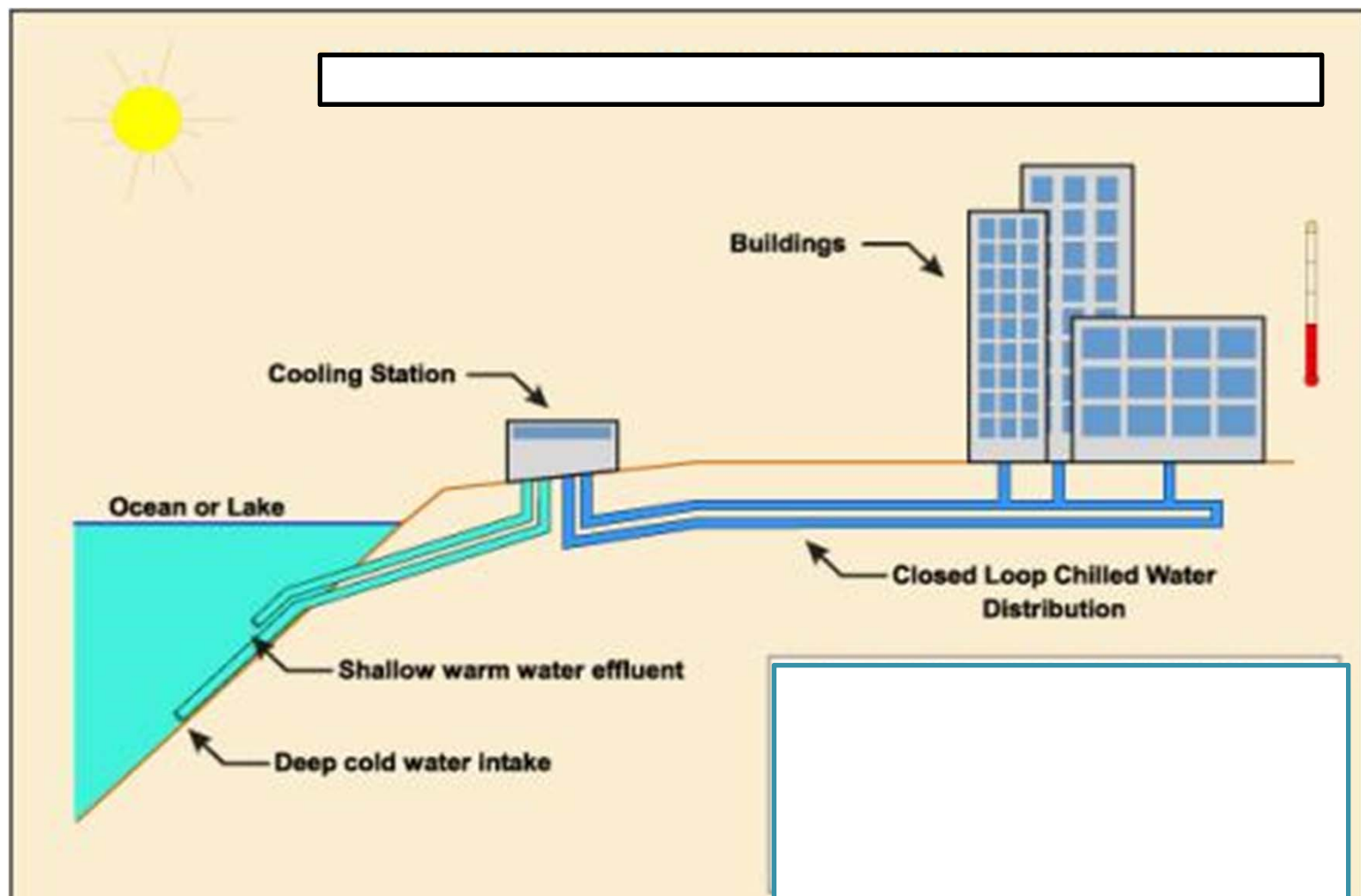
(3) Green and Smart Buildings

- Energy saving system – District cooling system and energy efficient light fittings
- Water Saving system – Rain water harvesting and root zone irrigation
- Recycled Materials
- Renewable energy system – Solar thermal water heating system and photovoltaic system



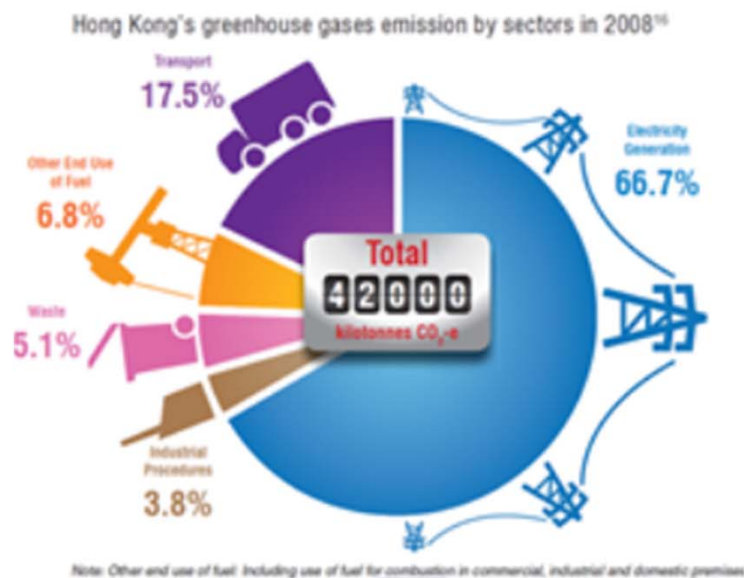
Urban Design Case 2 – Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

(Green Buildings) District Cooling System



Greenhouse Gas Emissions in Hong Kong

香港溫室氣體排放



Hong Kong's electricity consumption by sectors in 2008¹⁸



Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

(3) Green and Smart Buildings

- Energy saving system – District cooling system and energy efficient light fittings
- Water Saving system – Rain water harvesting and root zone irrigation
- Recycled Materials
- Renewable energy system – Solar thermal water heating system and photovoltaic system



Urban Design Case 2 - Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

(4) Sustainable Urban Planning

Softening the design and lowering ground temperature by landscaped streams (blue assets)

Kai Tak Drainage Channel
Shing Mun River



<http://www.susdev.gov.hk/>

Thank you!
謝謝！

