

# ***Sustainable Consumption of Biological Resources***

Sustainable Development Division

Environment Bureau

HKSAR Government

**Tom T.H. TAM**

**23 February 2017**





# Rundown

1. Latest Development of Sustainable Development

可持續發展的最新發展

2. Sustainable Consumption of Biological Resources

生物資源的可持續發展



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

# What is Sustainable Development?

## 什麼是可持續發展？

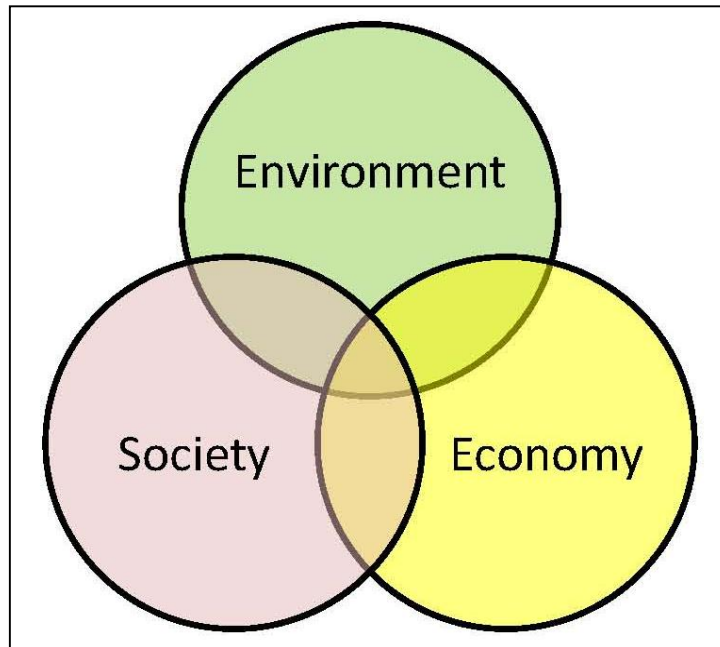
- ❖ “.....development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
- “既能滿足我們現今的需求，又不損害子孫後代去滿足他們需求的能力”的一個發展模式  
(“Our Common Future”, World Commission on Environment and Development, 1987)  
(《我們的共同未來》，聯合國環境與發展委員會，一九八七年)

# What is Sustainable Development?

## 什麼是可持續發展？

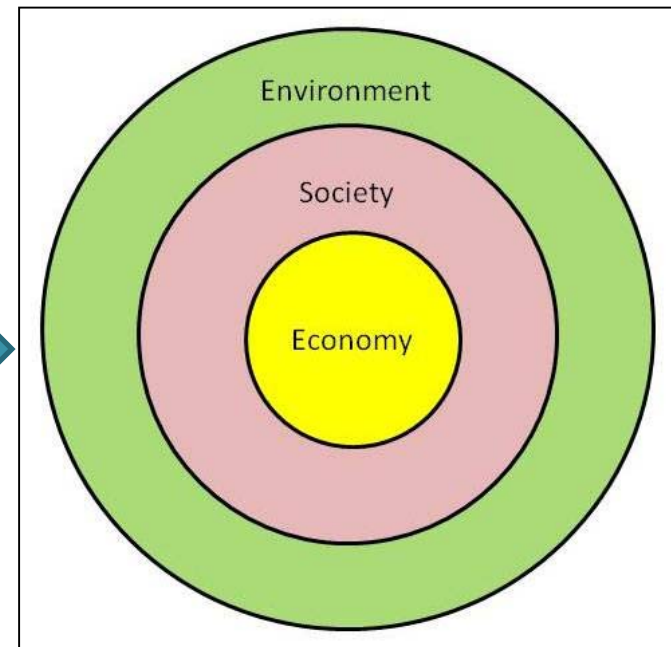
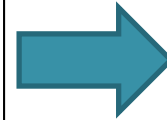
### Development in SD conceptual models

#### 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

UNCHE, 1972  
聯合國人類環境會議, 1972

Recognition of  
environmental  
problems

IUCN, 1980  
國際自然保護同盟, 1980

Analyses of the  
link between  
environment and  
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

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

Global  
blueprint  
for SD

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

World Summit  
on SD (R+20)  
reinvigorate  
political  
commitment

70

80

90

2000

# 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



# 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

## 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



# 2016 Seventh Public Engagement Process

## 2016年第七次公眾參與過程

Promotion on  
Sustainable  
Consumption of  
Biological Resources  
推廣可持續使用生物  
資源  
(生物資源  
識取惜用)



# What is Council for Sustainable Development (SDC) 可持續發展委員會 and its Public Engagement Processes 公眾參與過程?

- Established in 2003 by Chief Executive
- Members include representatives from environment, social and business sectors and senior Government officials
- Conducts public engagements on different sustainable development issues:
  - Identify priority areas
  - Prepare a public engagement document
  - Involve the wider community directly
  - Report back to Government
  - Government to act

# 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

[illegible]



[www.susdev.gov.hk/](http://www.susdev.gov.hk/)



## II. Sustainable Consumption of Biological Resources

# What are Biological Resource (生物資源)?

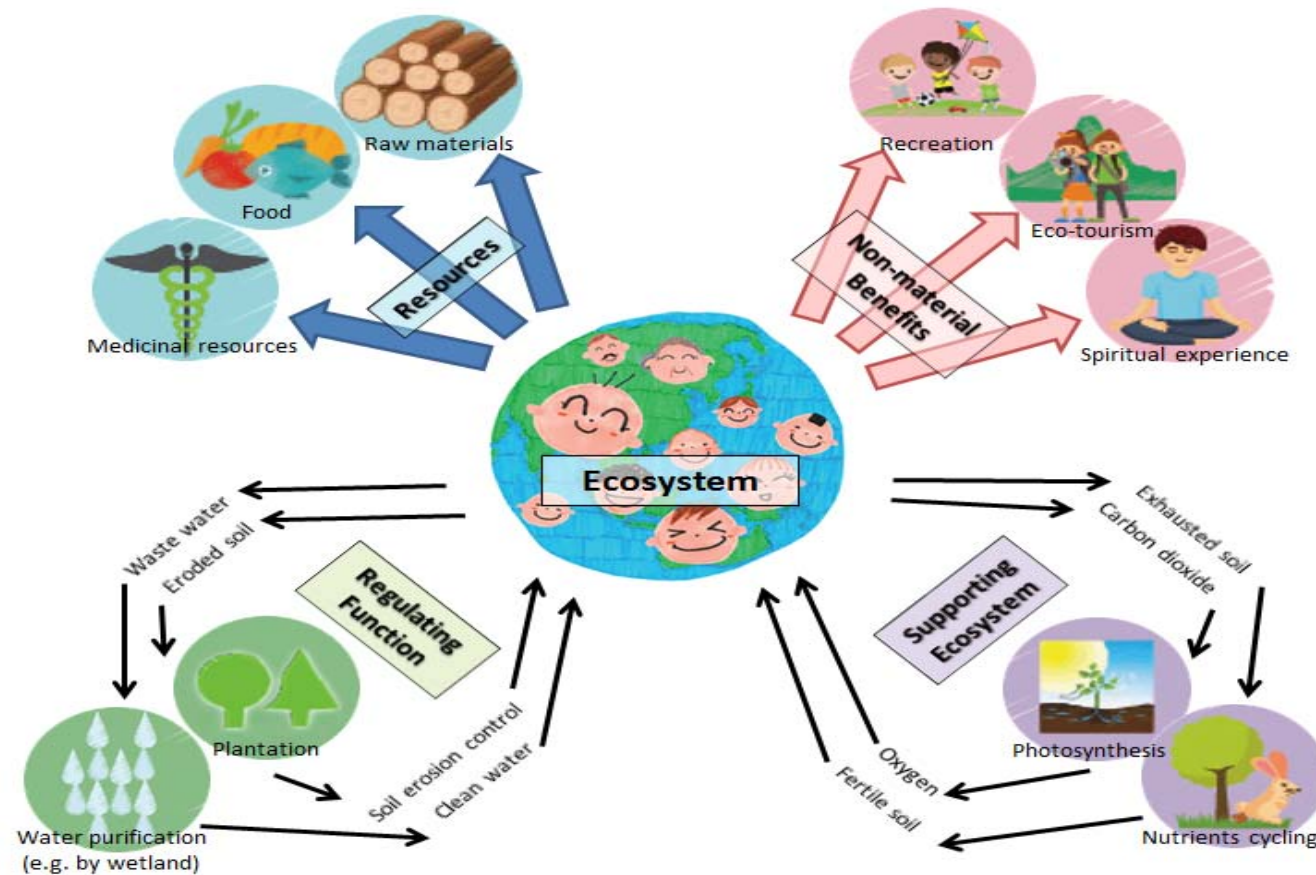
Biological resources include genetic resources, organisms or their parts, populations, or any other biotic component of ecosystems with actual or potential use of value for humanity. (Convention on Biological Diversity, United Nations)

Biological resources refer to all living organisms that fulfil human's fundamental needs 生物資源泛指那些可滿足我們基本需要, such as clothing, food and feed, shelter, fuel, paper, and medicine, etc.衣服、食物及飼料、住屋、燃料、紙張及醫藥等) 的各種生物。 Generally speaking, biological resources cover 3 types of resources 一般來說，生物資源可分為以下三種:

- Animal resources 動物資源, e.g. insects, fish, amphibians, reptiles, birds, mammals 昆蟲類、魚類、兩棲類、爬行類、鳥類和哺乳類；
- Plant resources 植物資源, e.g. trees, shrubs, herbs 喬木、灌木、草本植物；
- Microbial resources 微生物資源, e.g. bacteria 細菌。

# Why Sustainable Consumption of Biological Resources Important

Four functions of ecosystem生態系統: (1) providing resources; (2) providing non-material benefits; (3) supporting ecosystem; and (4) regulating functions.



- **Sustainable ? Consumption rate < Production rate**
- **Humans do not know when the ecosystem will break down**

# 2016 Seventh Public Engagement Process

## 2016年第七次公眾參與過程

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Sustainable  
Consumption of  
Biological Resources  
推廣可持續使用生物  
資源  
(生物資源  
識取惜用)



# Why are Biological Resources important to us

早上

穀物和小麥均來自**植物資源**，是重要的糧食作物。其生產過程中很多時都會使用**棕櫚油**。



大多數品牌的牙膏都含有**棕櫚油**。

大部分衣物、鞋、手袋都是由**棉花、蠶絲和動物皮**等材料製成。

# Why are Biological Resources Important to Us

下午

印刷用紙是從**森林**的各種木材原料加工製成的。



**乳牛**為我們提供牛奶，而牛奶可用於製作其他乳類製品，例如：芝士、乳酪、奶粉、忌廉和牛油。



傢具是從**森林**的各種木材原料加工製成的。

# Why are Biological Resources Important to Us

晚上





# Types of Biological Resources Discussed Today

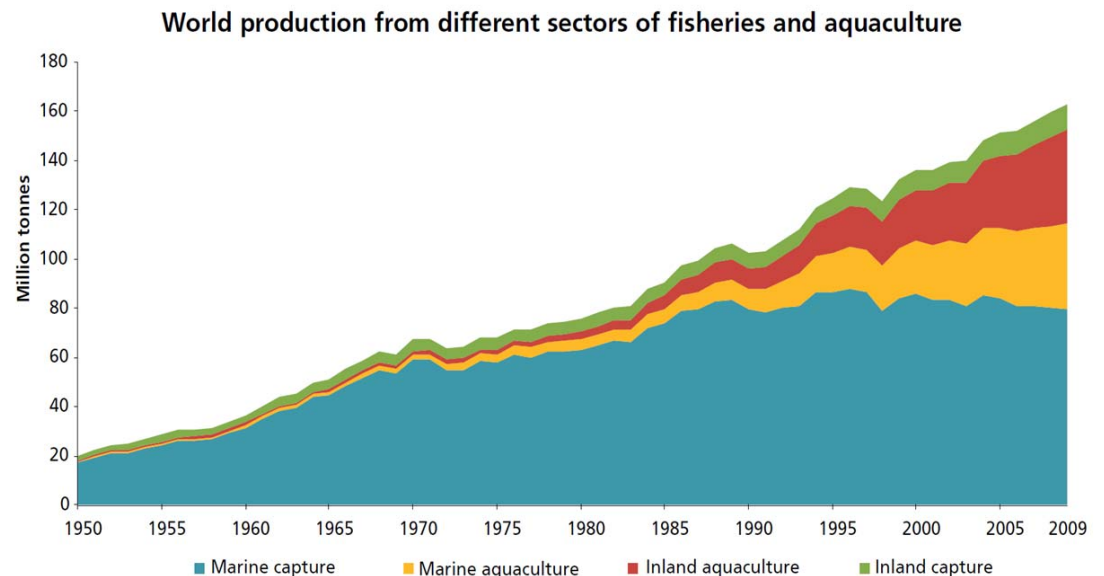
- **Marine Resources** 海洋資源
- **Cotton** 棉花
- **Timber** 木材
- **Palm Oil** 棕櫚油

# Current Levels of Consumption

## Overexploitation of marine resources 過度開採海洋資源

- The global production from different sectors of fisheries and aquaculture increased 8 folds from about 20 million tonnes in early 1950s to about 160 million tonnes in 2009.
- According to the Food and Agriculture Organization of the United Nations (FAO), over 70% of the world's fish species are either “fully exploited”, “overexploited” or “significantly depleted”.

(Source: Food and Agriculture Organisation, United Nations)



# Current Levels of Consumption and Problems

## Overexploitation of marine species

- **Pacific Bluefin Tuna** (太平洋藍鰭吞拿魚) is an example of overexploited species.
- According to the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean, in 2013, the Pacific Bluefin tuna population has declined by 96% since we began fishing it decades ago. Even worse, according to Global Tuna Conservation at Pew Environment Group, at least 90 % of the fish being caught have not yet reached reproductive age, which further undermines their ability to reproduce.  
(Source: International Scientific Committee for Tuna and Tuna-like Species in North Pacific Ocean)

# Current Levels of Consumption and Problems

## Overexploitation of marine species

- **Humphead Wrasse(蘇眉)** is now listed as “Endangered” on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species.
- **High-finned Grouper(老鼠斑)** is listed as “Vulnerable” by the IUCN.
- **Camouflage Grouper(清水石斑)** and **Leopard Coral Trout(東星斑)** are the other fish species facing the threat of depletion. Both of them are listed as “Near Threatened” by the IUCN.



# Current Levels of Consumption and Problems

## **Overexploitation of marine resources**

- Hong Kong is the sixth / seventh largest per capita seafood consumer in the world, an average resident consumes about 70 kg of seafood per year (2011/2012 figures), more than three times the global average.
- Partly due to overfishing in the South China Sea, the catches of a common fish consumed by Hong Kong people, i.e. Golden Threadfin Bream, have declined by 30% over the past 10 years.

# The Problems and Current Efforts

## **Overexploitation of marine resources**

“This is a sustainable fish”

<https://www.youtube.com/watch?v=6ps0truARKs>

- 85% of world fisheries were overtaxed
- By-catch caused by trawling
- Fishing Farms
- Eco-labels – e.g. ASC and MSC

# The Problems and Current Efforts in Hong Kong

## **Overexploitation of marine resources**

“環保海鮮”

<https://www.youtube.com/watch?v=2HtGlQIjwIQ>

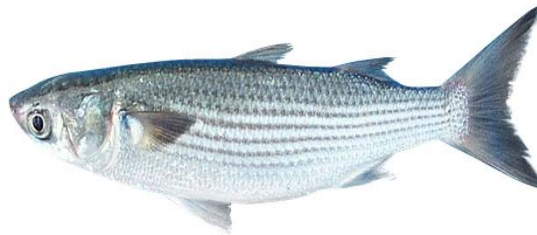
**2:30 – 6:22**

# The Problems and Current Efforts in Hong Kong



## Overexploitation of marine resources Current Efforts in Hong Kong

- AFCD Good Aquaculture Practice - Accredited Fish Farm Scheme 優質養魚場計劃



# The Problems and Current Efforts in Hong Kong

## **Overexploitation of marine resources Current Efforts in Hong Kong**

- Ban of Trawling 拖網 in 2012 by AFCD
- Companies Say No to Shark Fin
- Sustainability – conscious menus of government entertainment functions
- Seafood Guide by WWF  
世界自然基金會香港分會 《海鮮選擇指引》

# International Experiences – Eco-labels

## Marine Stewardship Council (MSC) 海洋管理委員會

<https://www.youtube.com/watch?v=EhosdSmvWrI>

- MSC collects data of fish stocks for analysis.
- To restore a fish stock to a sustainable level, MSC certifies greatly reduced in its capture
- Amongst about 1,500 fish stocks, only about 500 stocks are comprehensively analysed.



# Current Levels of Consumption

## Cotton 綿花

- **Cotton** is most commonly grown in **monoculture** (the approach of growing a single crop in a given field) and its production often involves high water consumption and heavy use of pesticides and dyes.
- It takes more than **2,700 litres of water** to produce just **one single cotton T-shirt**. Taking the average water consumption per person per day in Hong Kong, this is enough for a person's use for about **20 days**.
- In 2014, 110,000 tonnes of textiles were discarded in Hong Kong, which is equivalent to discarding some 1,400 T-shirts per minute.



# Current Efforts in Hong Kong

## **Cotton**

- The EcoChic Design Award (可持續時裝設計大獎) is a sustainable fashion design competition which aims to inspire fashion designers and students to design mainstream clothing with sustainable techniques.
- Collection of old clothes to reuse organised by various NGOs.

# International Experiences – Eco-labels

## **Better Cotton Initiative (BCI)** 更優質棉花倡議

<https://www.youtube.com/watch?v=9MqopykgHHk>

<https://www.youtube.com/watch?v=E7gnQISylac>

<https://www.youtube.com/watch?v=ees8BSIFDlw>

- Only 2% of world cotton market comprises sustainable cotton.
- Areas of concerns : Use of less water and pesticide (environmental), education of children (social), and more earning (economic).





# Current Levels of Consumption

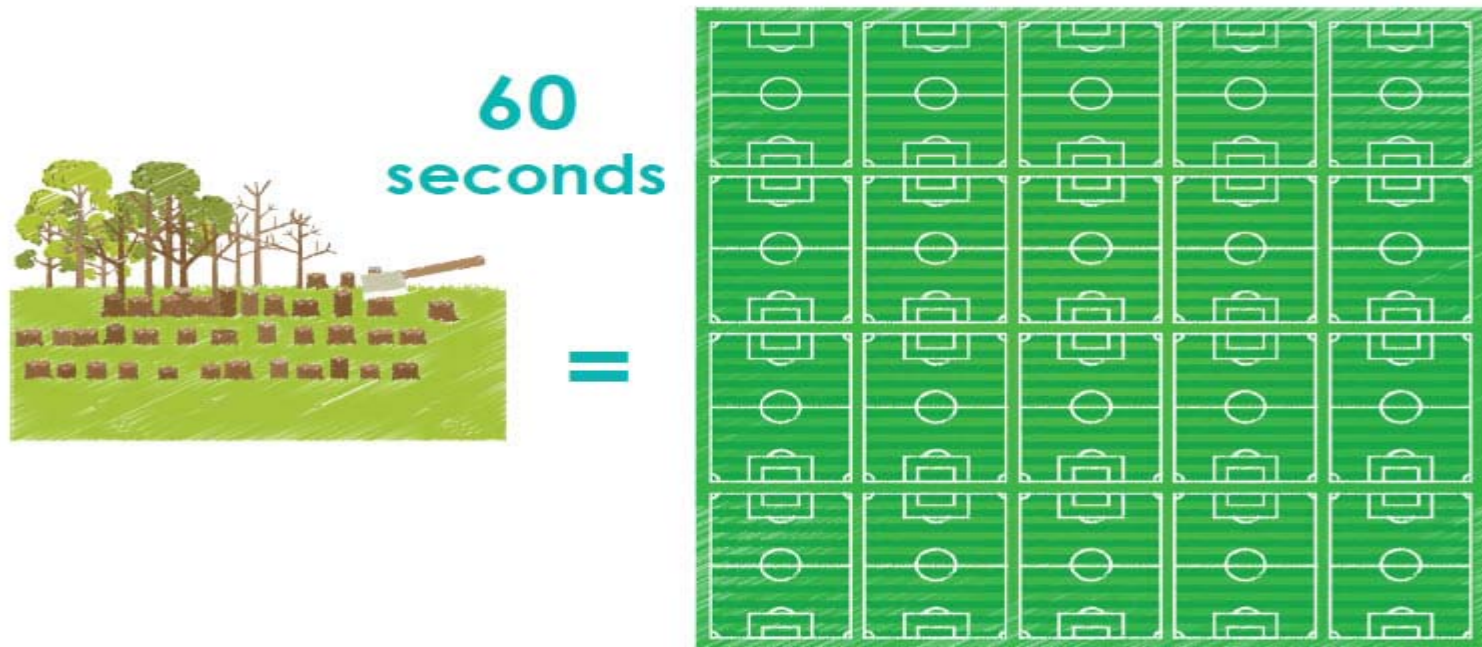
## **Paper, wood and pulp products**

- The global market for wood, pulp and paper products creates pressure on tropical countries to clear their forests.

# The Problems

## Deforestation 森林砍伐

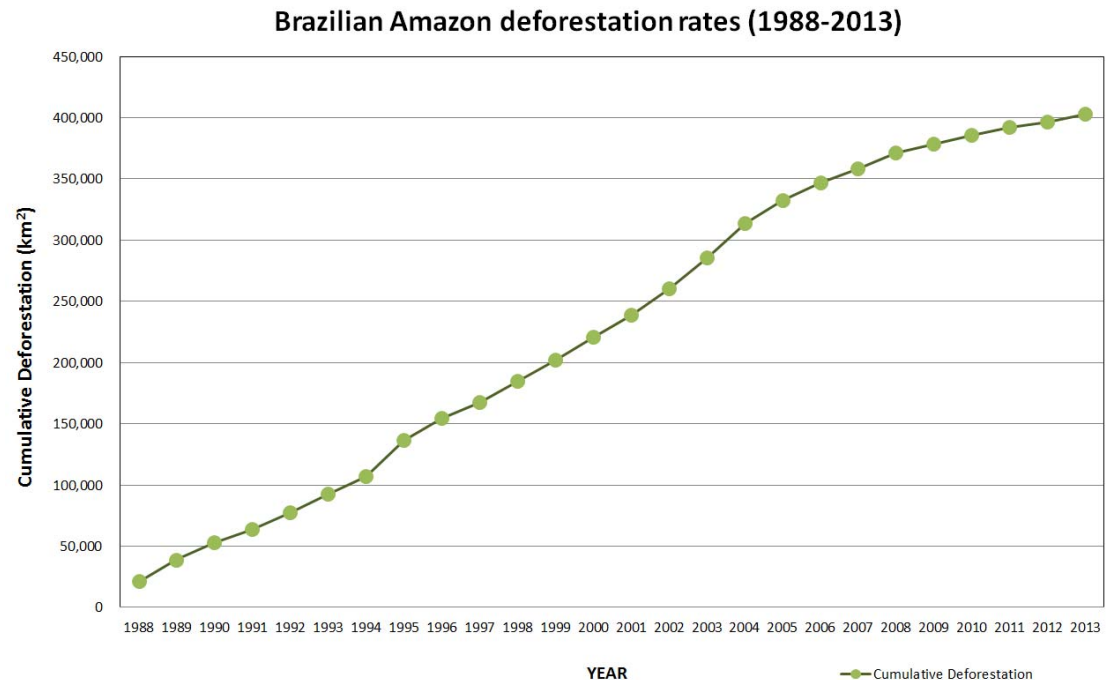
- Deforestation results from the huge demand for timber and wood products. Globally, an estimated 70,000 sq. km. of forests, equivalent to the size of 60 to 70 of Hong Kong land area, are lost each year. The losing rate is equivalent to the size of 20 football fields every minute.



# The Problems

## Deforestation

- According to the National Institute for Space Research, Brazil, from 1998 to 2013, deforestation in Amazon, Brazil had accumulated to over 400,000 km<sup>2</sup>, which is equivalent to almost 400 times of the land area in Hong Kong.



# Current Efforts in Hong Kong

## Paper, wood and pulp products

- Certified pulp and paper products in Hong Kong have increased substantially in the past five years.
- As of May 2016, there were 624 **Forest Stewardship Council (FSC)** 森林管理委員會 suppliers in Hong Kong, up from around 398 in 2011. FSC is an internationally well-known certification scheme for wood and paper based products.



# International Experiences – Eco-labels 環保標籤

## **Sustainable Forestry Initiative (SFI)** 可持續林業倡議

<https://www.youtube.com/watch?v=w6mBCr4zF4Q>

- Area of concerns : productivity (economic), biodiversity, recreational and visual benefits, protection of special sites (environmental), qualified personnel to log, and training of staff (social).



# Current Levels of Consumption

## Palm oil 棕櫚油

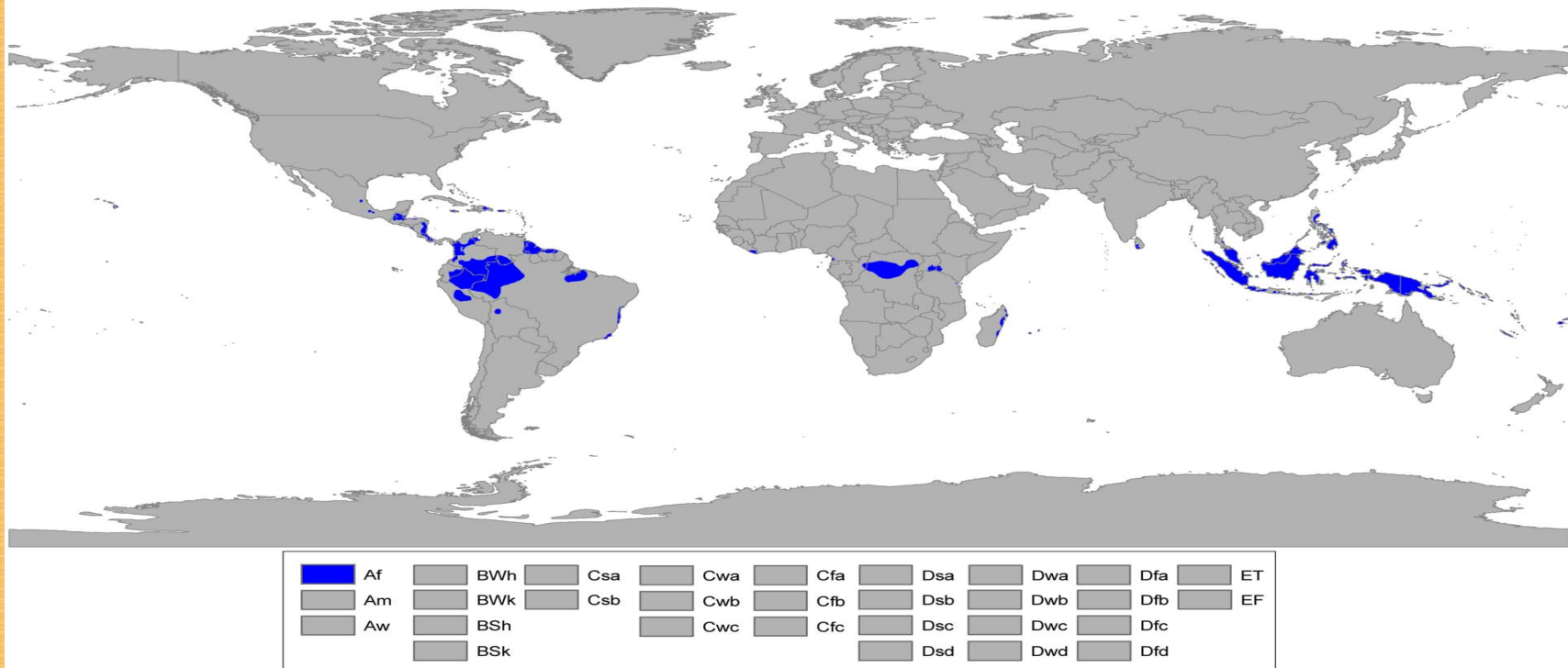
- Palm oil is found in almost everything from food and household products, to cosmetics and other body care products, e.g. pizza, ice-cream, chocolates, soap and lipsticks.



# Current Levels of Consumption

## Palm oil

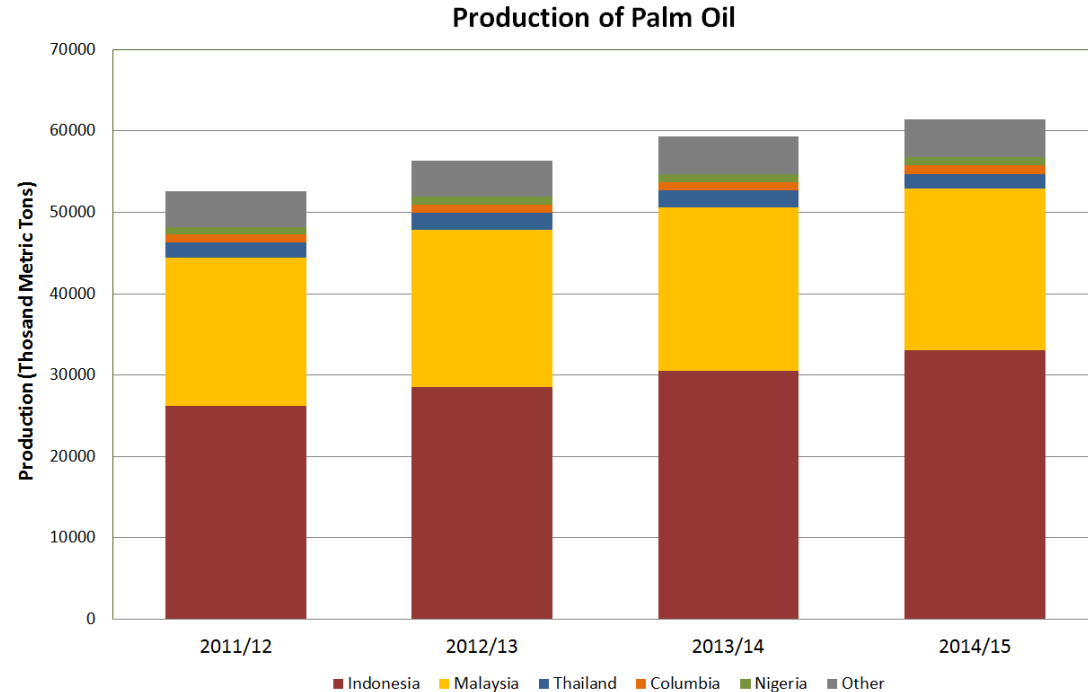
- Palm oil is a type of edible vegetable oil derived from the fruit of oil palm trees. Today, palm oil plantations are growing throughout Asia, Africa and Latin America, mostly at the expense of tropical forests.



# Current Levels of Consumption

## Palm oil

- Currently, Indonesia and Malaysia produce over 80% of the world's palm oil. According to US Department of Agriculture, the global production of palm oil has risen by 20% from 2011 to 2015. Indonesia and Malaysia are the two major producers.



# The Problems

## Deforestation

- Indonesia lost at least 12,400 km<sup>2</sup> of forest over the period from 2009 to 2011, 40% of the loss took place in Sumatra. The palm oil sector was the single largest driver of deforestation in the 2009–2011 period in Sumatra, with identified loss accounting for about a quarter (3,000 km<sup>2</sup>) of forest loss.

# The Problems

## Loss of Natural Habitats 生境破壞

- According to Borneo Orangutan Survival Australia, the primary threat to orangutans is the loss of habitats. Up to 80% of suitable forests in Indonesia and Malaysia have been lost in the past 20 years. In 2015, estimates show less than 7,000 Sumatran orangutans and 50,000 Bornean orangutans are surviving in the wild.



A Bornean orangutan  
婆羅洲猩猩



A Sumatran orangutan  
蘇門達臘猩猩

# The Problems

## Loss of Natural Habitats

- Forest destruction for palm oil production is pushing Sumatran tigers 蘇門答臘虎 to the edge of extinction. Tigers need large areas of forest and wildlife corridors to range in order to hunt. Deforestation has fragmented extensive tracts of rainforest.



- We don't know when we'll come to the crunching point when the nature punishes humans.
- We know little about the nature – only about 10% of the global species have been identified.



# The Problems and International Experiences

## **Palm oil**

- <https://www.youtube.com/watch?v=M3b4n7Mz1YE>

# International Experiences – Eco-labels

## Palm oil

- Roundtable on Sustainable Palm Oil
- The certification system covers one million ha of palm tree plantation area (about 10 times of Hong Kong land area).





What will be our next actions?



# Next Actions – Facilitate Smart Choices of Consumers

- Ecolabels
  - Are eco-labelled products more expensive?
  - Is it different to purchase eco-labelled products?
- **Information platform** can provide a wide range of information, including updates on different eco-labels and certificates, facts and statistics of sustainable products (product origins, harvesting methods, etc.), availability suppliers, and results of market surveys on consumers' attitudes and preferences.

# Next Actions – Promoting Best Practices Among Businesses and Public Sector

- Green Procurement Guidelines
- Charters and Voluntary Commitments – Business sign green charter as a formal pledge to their voluntary commitments on social responsibility and environmental protection.
- Award Schemes – e.g. (1) The UK's Sustainable Restaurant Award; and (2) Green Card Reward Programme in South Korea.
- Green Banquets and Dining Guidelines



# Next Actions – Education and Publicity

## Examples

- Sustainable Consumption Week in the Mainland



- Singapore Supports the Use of Sustainable and Haze-free products – In order to educate people on the impact of open burning to clear land for agriculture and palm plantation, ...environmental groups and a think tank launched a series of educational outreach and social media programmes in 2015, including public engagement campaign, bus stop advertisement, nature walks, mall exhibitions, school talks, art installations, and short videos production.

## 2016年第七次公眾參與過程



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

*Thank you!*

謝謝！



Supplementary Info .....

# Interactive Game – A Package of Actions to Promote Sustainable Consumption of Biological Resources

## **Actions may include**

- Establishment of an information platform of eco-labels to facilitate smart choices of consumers
- Promotion of best practices amongst businesses and public sector
  - (1) Green Procurement Guidelines
  - (2) Charters and Voluntary Commitments
  - (3) Award Schemes, e.g. Green Card Reward Programme
  - (4) Green Banquets and Dining Guidelines
- Education and publicity

## **in following trades**

- Fisheries products
- Timber products
- Palm oil related products
- Cotton / garments

# Interactive Game – A Package of Actions to Promote Sustainable Consumption of Biological Resources

## Game Instruction

### *Part A*

- Assign 'Stakeholder Roles' (**Yellow**) (Stakeholders in the game include Government, Consumers, NGOs and Traders.)
- Discuss by starting with the Public Sector to formulate a **package of actions**.

### *Part B*

- Conduct a **Sustainability Assessment** 可持續發展評估 on your proposal and write the ideas on the 'Game Sheet'
- Produce a group statement

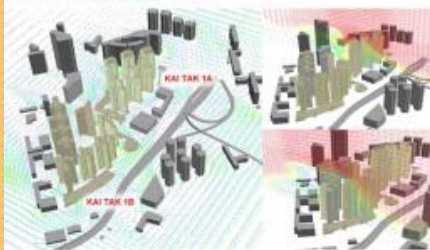
# Urban Design Case 2 – Sustainable Urban Design in Kai Tak 個案2 ---啟德可持續發展城市設計

## PUBLIC HOUSING DEVELOPMENT AT KAI TAK SITES 1A & 1B

啟德第一甲區及第一乙區地盤公共房屋發展



### Urban Design Plan



### Microclimate Study

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



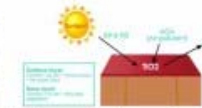
### Homes in the Park

- 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



### Proposed Environmental Features

- A. Energy Saving System
  - District cooling system
  - Energy efficient light fittings
- B. Water Saving System
  - Rain water harvesting
  - Root zone irrigation
- C. Recycled Materials
  - Paver with recycled aggregate and glass
  - Use of PFA in concrete
  - Marine mud made materials
- D. Renewable Energy System
  - Photovoltaic system
  - Solar thermal water heating system



- E. Environmental Transportation
  - Electric car charging system
  - Electric vehicle as contract car
- F. Environment-friendly Construction
  - Precast facade, staircases & volumetric precast kitchen/ bathroom



- Advantages:
- Less wet trade
  - Less construction wastes on site
  - Higher quality
  - Better control of workmanship



## Sustainability Assessment 可持續發展評估 differs from EIA 環境影響評估

Environmental Impact Assessment (EIA) is a planning tool has to do with the methodologies and techniques for identifying, predicting, and evaluating the **environmental** impacts associated with particular **developments actions (projects)**.

[Kennedy, 1988]



## Sustainability Assessment differs from EIA

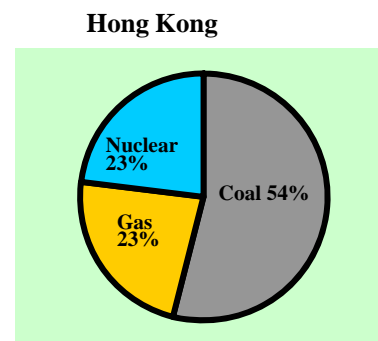
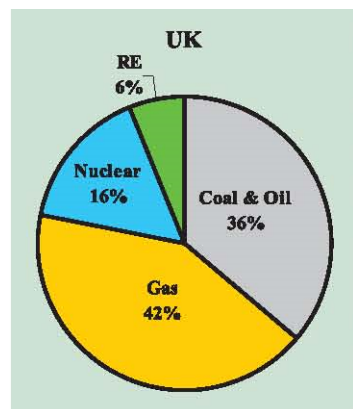
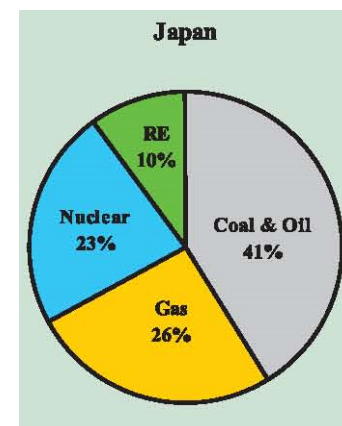
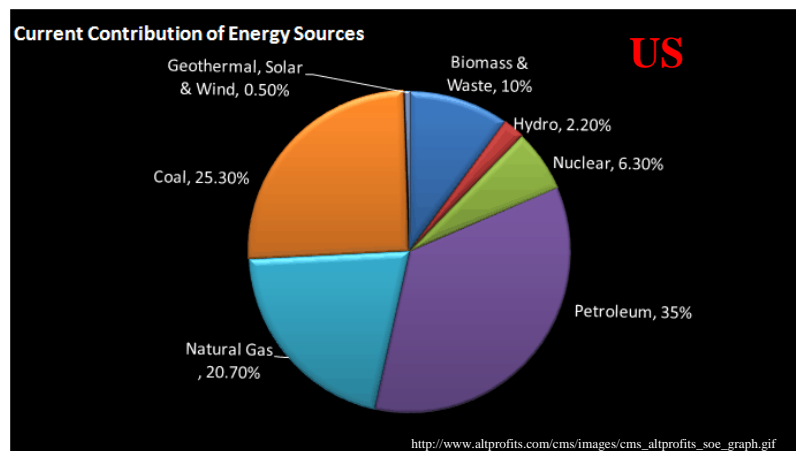
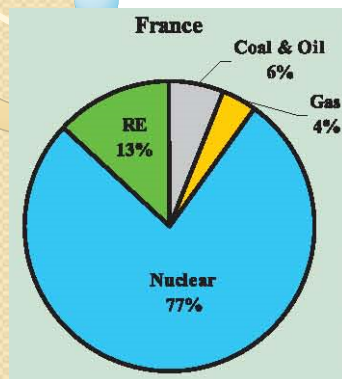
Noise standards 噪音標準 and Air Quality Objectives 空氣質素指標 have to be met in EIAs

No standards to meet in most cases of Sustainability Assessment

# Ozone Hole



# World Primary Energy 世界各國初級能源 By Different Types of Fuel



Source: Consultation Document (HK's Climate Change Strategy and Action Agenda- Sept 2010)

# Hong Kong's Carbon Footprint 碳足跡

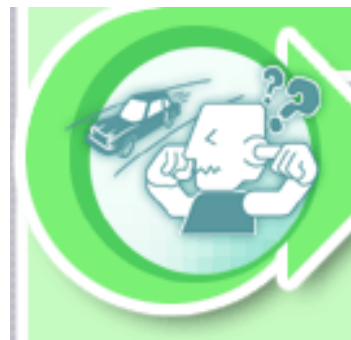
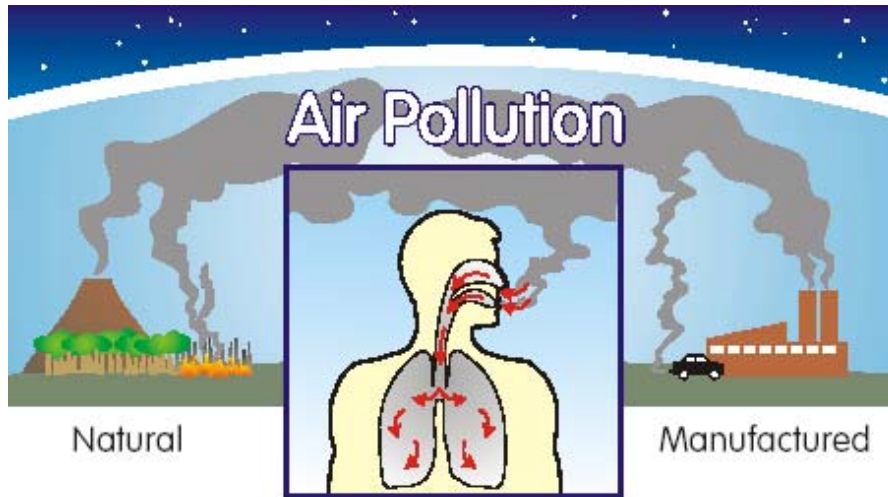
*In 2008, the total GHG emission of Hong Kong were about 42,000,000 tonnes CO<sub>2</sub>-e, or around 6 tonnes on a per capita basis, accounting for about 0.1% of global emission or slightly less than that of Hong Kong's population as a share of the world's total..... 2008年，香港的總溫室氣體排放量約為4,200萬噸二氧化碳當量，人均溫室氣體排放量約為6公噸。香港排放佔全球排放量約0.1%，略低於香港人口佔全球人口的比例。*

Source: Consultation Document (HK's Climate Change Strategy and Action Agenda- Sept 2010)



# 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

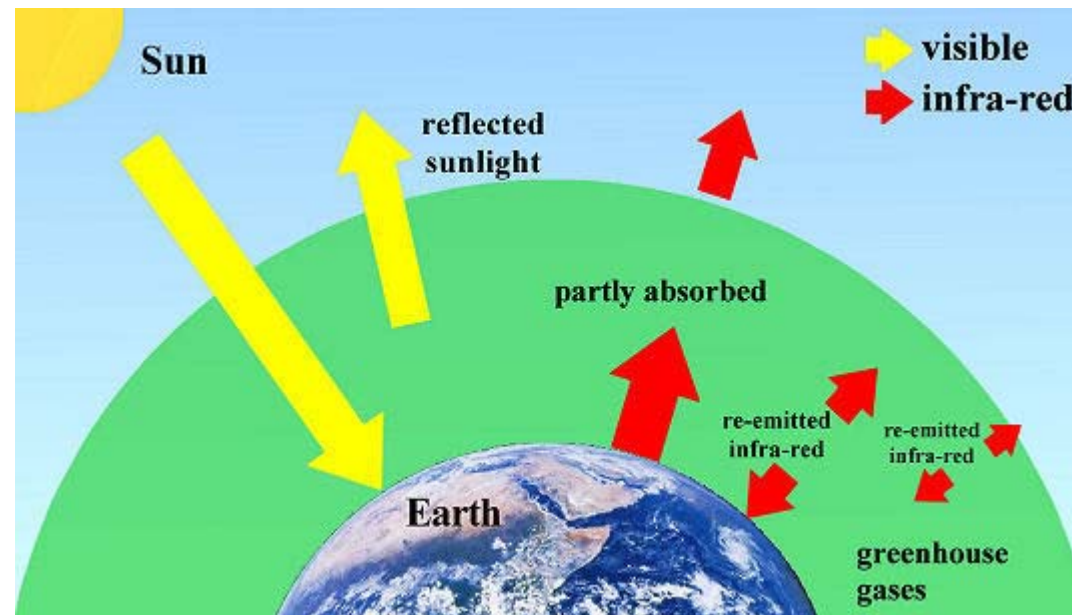
一些可持續發展的課題 --- 溫室氣體排放 --- 氣候  
變化

**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

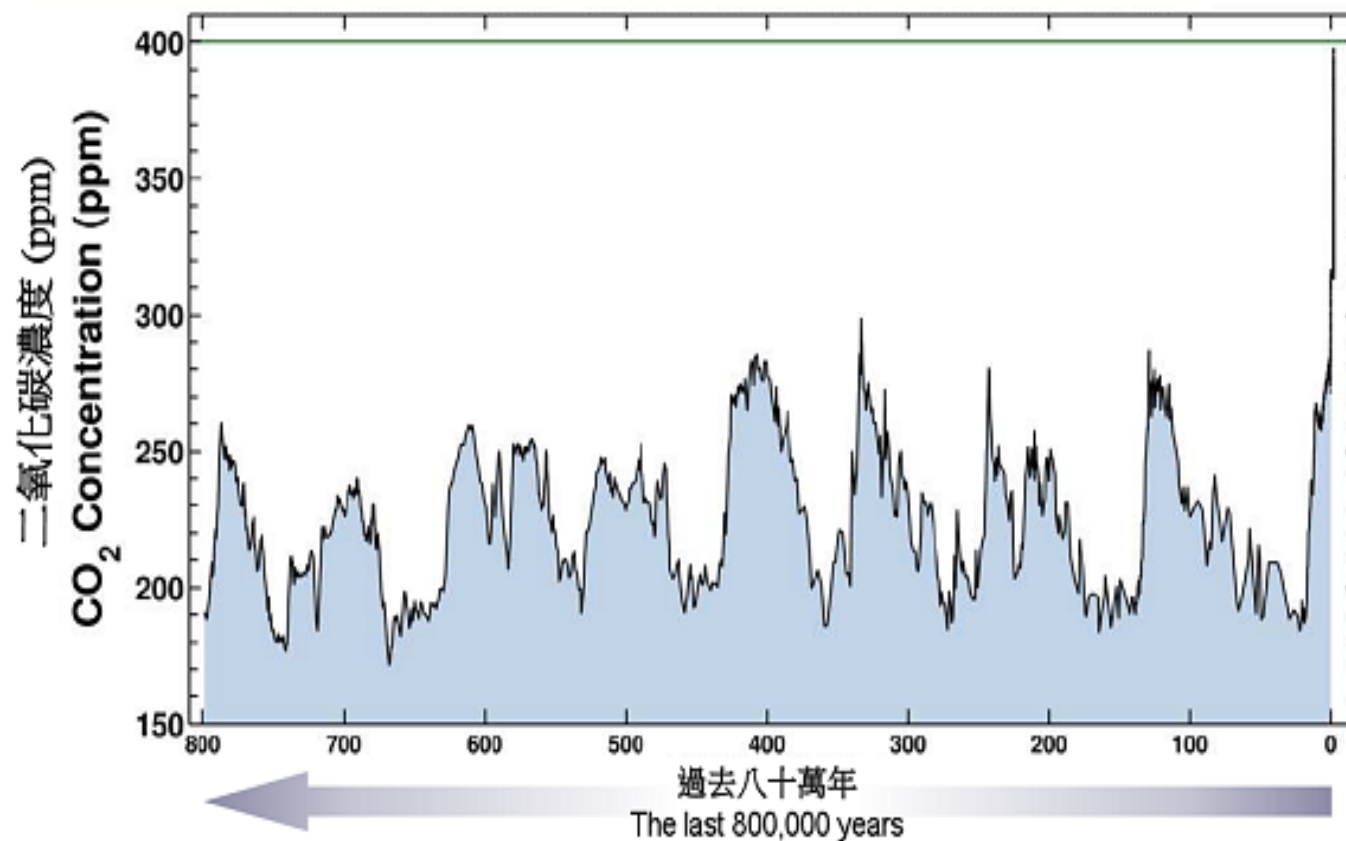
一些可持續發展的課題 --- 溫室氣體排放 --- 氣候變化



Courtesy : Hong Kong Observatory

# Some General SD Issues – Greenhouse Gas Emissions

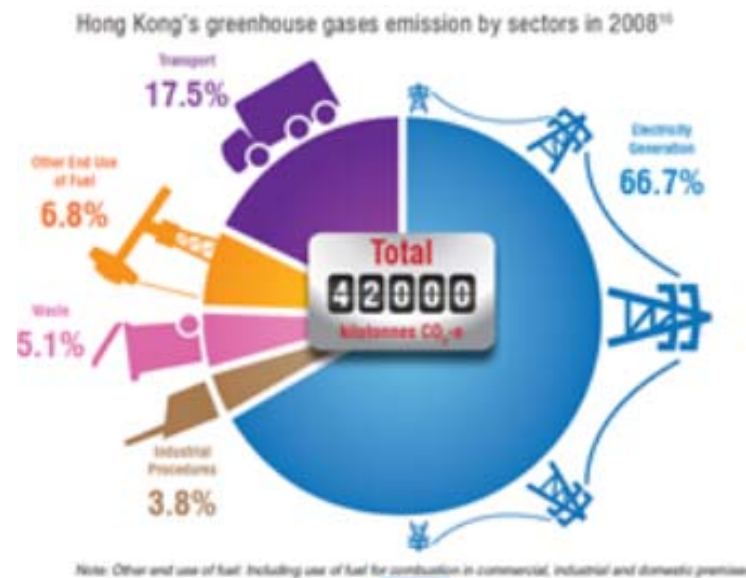
一些可持續發展的課題 --- 溫室氣體排放



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 2008<sup>18</sup>

