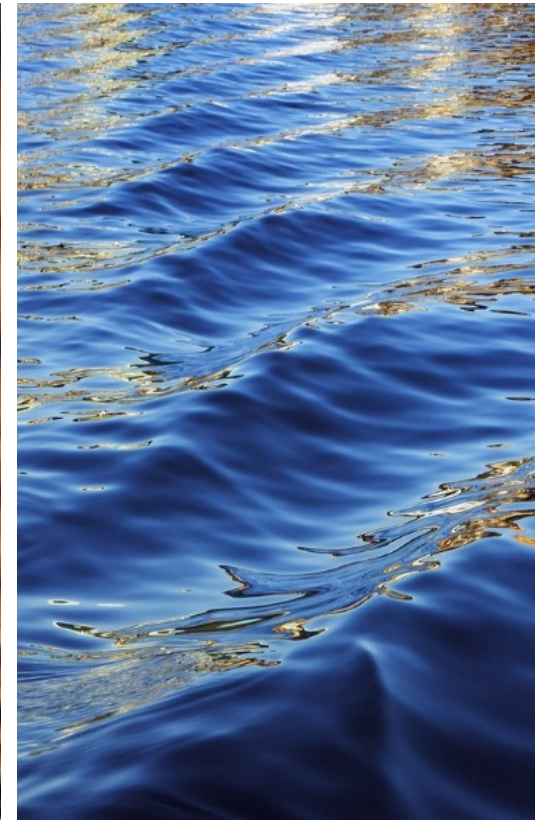


# **Sustainable Development**

Teaching and Learning Strategies



# Acknowledgement

- School-based curriculum development team in LS
  - Ms. Chow Lok Yee
  - Ms. Lam Ki Yan
  - Ms. Chan Pui Ying
  - Mr. Leung Chak Ho

# Agenda

- Curriculum Plan
- Teaching sustainable development in
  - Junior form
  - Senior form
- Teaching Tips

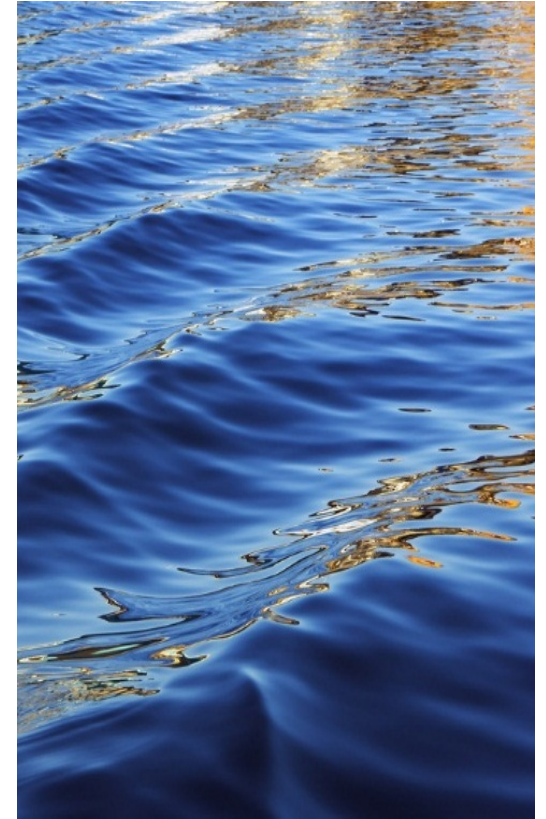
# Curriculum Planning

	Topics	Personal	HK	China	Global
Form 2	<ul style="list-style-type: none"> <li>Sustainable Development</li> <li>Solid Waste Management</li> </ul>	Y	Y		Y
Form 4	<ul style="list-style-type: none"> <li>Sustainability</li> <li>Energy Problems</li> <li>Global Warming</li> <li>Renewable Energy</li> <li>Solid Waste Management</li> </ul>	Y	Y	Y	Y
Form 6	<ul style="list-style-type: none"> <li>Climate Change and global governance</li> <li>Sustainable Development in Hong Kong and China</li> </ul>	Y	Y	Y	Y



# Junior Form

Form 2 LS Sustainable Seafood



# Form 2

## Sustainable Development

### 3.1 Sustainable Development

#### Activity 1 What's the matter with you, Mr Earth?

Watch the TV commercial and answer the questions that follow.

1. Mr Earth is sick. List the "sicknesses" that he is suffering from.



2. Apart from the sicknesses shown in the TV commercial, what other sicknesses do you think he is suffering from? Name 3.
- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
3. Mr Earth suffers from these sickness is due to the improper development of human beings. We do not take into the idea of \_\_\_\_\_ into account.

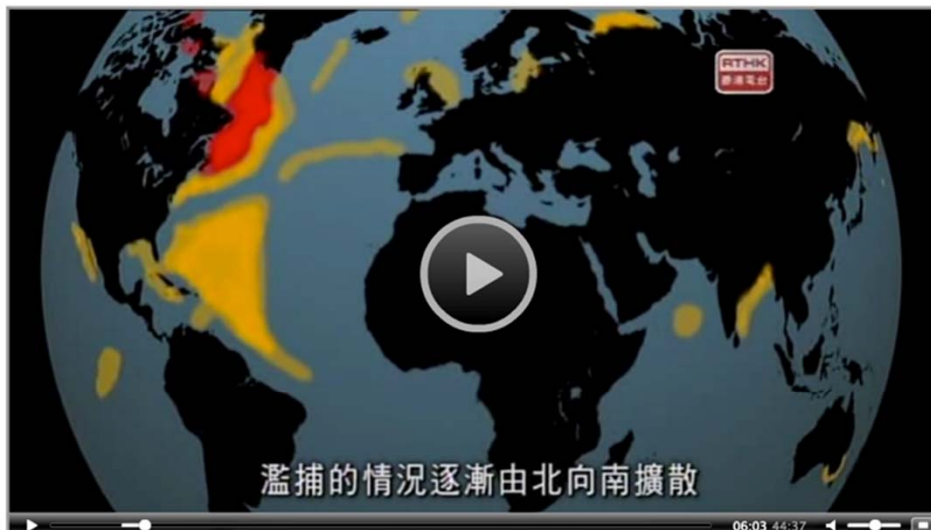
- Earth's problems
- Improper development of human beings
- 'Improper' : not taking into consideration of sustainability
- 'Sustainability'?



# Case study: Over-fishing

天人合一

大地的恩澤



影片標籤 (CuePoints) :

- 0140 中國古代“天人合一”的哲理
- 0209 李樂詩講述地球環境遭破壞
- 0325 港人吃海鮮的習慣影響海洋自然生態
- 0535 全球濫捕問題擴散
- 0734 塞內加爾面對濫捕情況及補救措施
- 1202 中國人對豬肉需求增加導致污染
- 1424 浙江省嘉興市養豬業造成污染情況
- 1600 政府和科學家減低養豬污染措施及成效
- 2053 香港夫婦嘗試舉行環保婚宴情況
- 2240 內布拉斯加州養牛情況
- 2423 生產肉類導致全球暖化的理據
- 2555 支持工業化生產肉類模式
- 2950 反對工業化生產牛隻模式
- 3137 香港人食肉量大，素食減碳排放
- 3334 跨國企業對內蒙古鄂爾多斯農民和環境造成的影響
- 3729 工業化生產模式對環境的改變
- 4107 科羅拉多州牧場傳統小農生產方式

思考問題：

1. 香港人的飲食生活與海洋生態有什麼關係？
2. 試分析中國科學家及政府減低浙江省嘉興市養豬污染的成效。
3. 試比較傳統小農生產與工業化生產方式有何不同。
4. 試分析減吃牛肉有助環保的理據。
5. 綜合節目內容及就你所知，請分析工業化生產模式與可持續發展的關係。
6. 你認為在飲食全球化下，人類為「食」破壞大自然的行為後，可否作出補救？

延伸閱讀：

1. 通識工作紙：食得環保  
<http://www.liberalstudies.tv/ws/0013/>
2. 集師廣益：舌尖上的通識  
[http://www.liberalstudies.tv/blog/fs\\_blog.php?mode=showThread&id=1596&mother](http://www.liberalstudies.tv/blog/fs_blog.php?mode=showThread&id=1596&mother)

播出日期: 2013-11-09

學習單元: 今日香港 現代中國 全球化 能源科技與環境

片長: 00:45:00分鐘

污染 農業 工業化生產 飲食 生態平衡 環保 捕漁業 可持續發展

簡介:

大地為人類提供豐富資源，但當人類在開拓大自然時，卻不是經常顧及和順應大自然的規律。隨著全球化食品供應市場的發展，人類對肉類和魚類需求提升，導致海洋生態失衡，而一些豬牛飼養過程則製造了污染或碳排放。節目從現代食物生產和消費角度出發，探討塞內加爾捕漁業、內蒙古農業、浙江省及美國畜牧業的運作，對環境及農業社群產生的影響。糧食的生產與消費，與天然資源的保育議題緊緊扣連，同時亦與人類生存息息相關。

Source 1 Video source (Fishery in Senegal)

RTHK (<http://www.liberalstudies.tv/video/programme.php?vid=nmio13-epi-0001>)

Source 2 Fishery in Sub-Saharan Africa

Over-fishing is emptying the seas faster than nature can replenish it, threatening the food security of hundreds of millions of people.

West African nations have some of the richest fishing grounds in the world; yet their food security is under threat. European and Asian fishing fleets have moved into West African waters over the past 30 years after depleting their own fish stocks. Sub-Saharan Africa is now the only region on Earth where per capita fish consumption is actually falling, partly because foreign fishing fleets have removed so much fish. The foreign fishing fleets take their catch to ports far from Africa, making millions of dollars, while Africa's coastal communities grow poorer.



As the captain of a local fishing boat sums it up, "If we don't have a sustainable policy for this sector, we will have no fishing whatsoever... We urgently need to carry out a sustainable policy, especially for small-scale fishery. The whole region depends on small-scale fishery."

2. What are the features of the fishing practices? Are these practices sustainable?

	Fishing Practice by Foreign Fishing Fleets	Traditional fishing practice by Senegalese
Features of the fishing practice		
Can the fishing practice continue forever?		

Source 3 Global loss of seafood species

### All seafood will run out in 2050, say scientists

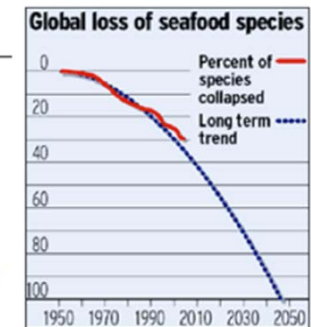
The world's stocks of seafood will have collapsed by 2050 at present rates of destruction by fishing, scientists said yesterday.

The study was done by an international group of ecologists and economists. It says the loss of biodiversity harms the ability of oceans to feed the world's growing human population which is expected to rise by 50 per cent to nine billion in 2050.

Dr Boris Worm said: "This is what is projected to happen. I am confident we will not go there because we will do something about it. But if this trend continues in this predictable way, as it has for the last 50 years, the world's currently fished seafoods will have reached what we define as collapse by 2048.

Prof Callum Roberts said: "The animals and plants that inhabit the sea are essential to the health of the oceans and well-being of human society."

(Source: The Telegraph, 03 Nov 2006)



What is the relationship between human beings and the nature?

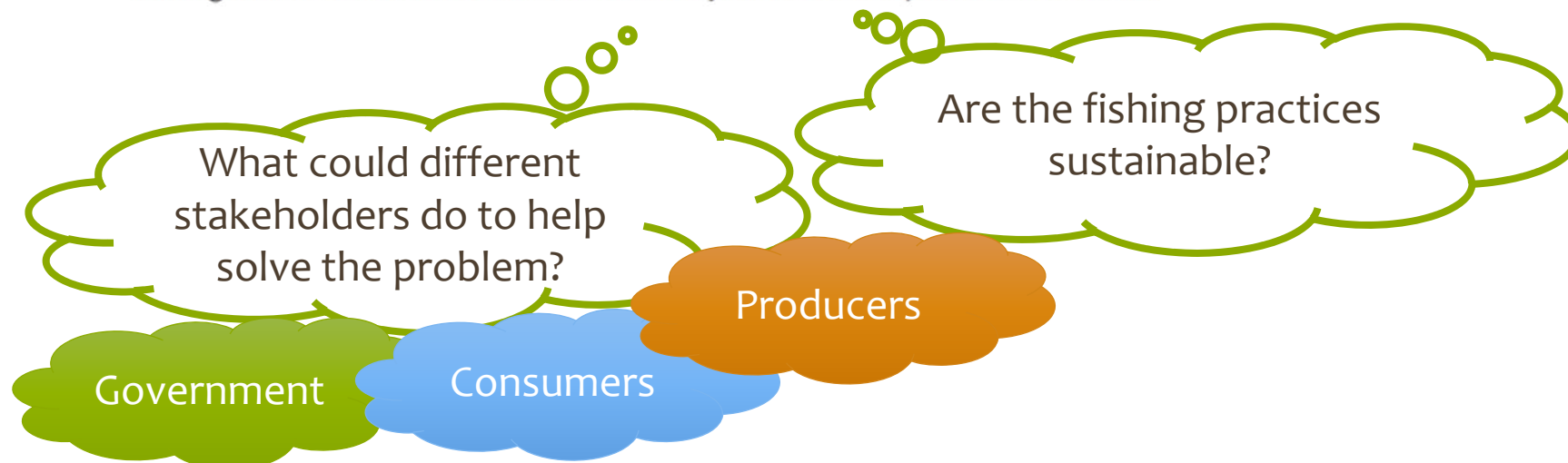


## What is 'sustainability'?

**Sustainability** (n.) is about taking what we need to live now, without harming the potential for people in the future to meet their needs. If an activity is said to be **sustainable** (adj.), it should be able to continue forever.

Living **sustainably** (adv.) is about living within the means of our natural systems (environment) and ensuring that our lifestyle does not harm other people (society and culture).

Increasingly our lifestyle is placing more and more pressure on natural systems. Scientists continue to investigate how human interactions with natural systems can be improved and sustained.



# Consolidation

## **Sustainable Fishery:**

A fishing system that allows fishes to be replenished by the nature without depletion in order to prevent over-fishing. Examples include fishery management practices like establishment of no-take zone, quota system, size-limit of the caught, moratorium of fishing activities, use of environmental-friendly fishing methods, etc.

# Your participation is important too!

## 海鮮選擇指引 SEAFOOD GUIDE

選擇環保海鮮 未來年年有「魚」  
ASK FOR SUSTAINABLE SEAFOOD  
FOR OUR FUTURE GENERATIONS

### 如何使用 USAGE GUIDE

本指引將香港市面上的70多種海鮮分為三個類別：  
This guide lists more than 70 types of seafood available in Hong Kong into three categories.

**建議**

這些海鮮來自管理完善的漁業。其捕撈或養殖的方法對環境影響較小，是消費者首選。

Seafood comes from well-managed fisheries where seafood is caught or farmed in an ecologically-friendly way - the preferred choice for consumption.

**想清楚**

這些海鮮來自不可持續發展的漁業。牠們的野生種群遭過度捕撈，無論捕撈及養殖的方法都對生態造成嚴重影響，現階段應避免食用。

Seafood comes from unsustainable fisheries, and is over-exploited, caught or farmed in an ecologically-unfriendly way. Avoid consuming seafood from this category.

**避免**

這些海鮮來自不可持續發展的漁業。牠們的野生種群遭過度捕撈，無論捕撈及養殖的方法都對生態造成嚴重影響，現階段應避免食用。

Seafood comes from unsustainable fisheries, and is over-exploited, caught or farmed in an ecologically-unfriendly way. Avoid consuming seafood from this category.

### 建議 RECOMMENDED

品種 SPECIES	來源 ORIGIN	方法 METHOD
黃鰭吞拿魚 Albacore tuna	加拿大/ 斐濟 Canada/ Fiji	✓
雪花鱈魚 Chilean sea bass	英屬南喬治亞島 South Georgia, UK	✓
鱈魚 Pacific cod	美國 US	✓
比目魚 Pacific halibut	美國 US	✓
藍尖龍躑魚 Hoki	紐西蘭 New Zealand	✓
狹鱈魚 Pollock	美國 US	✓
三文魚 Pacific salmon	加拿大 Canada	✓
海蝦 Northern shrimp	加拿大 Canada	✓
龍躑 Giant grouper	香港 Hong Kong	✓
黃星斑 Leopard coral trout	澳洲昆士蘭 Queensland, Australia	✓

### 想清楚 THINK TWICE

品種 SPECIES	來源 ORIGIN	方法 METHOD
三文魚 Atlantic salmon	愛爾蘭/ 挪威/ 蘇格蘭 Ireland/ Norway/ Scotland	✓
三文魚 Pacific salmon	美國 US	✓
龍躑 Black cod	美國 US	✓
沙甸魚 Sardine	西班牙 Spain	✓
黃鰭吞拿魚 Yellowfin tuna	印尼/ 菲律賓 Indonesia/ Philippines	✓
龍躑 Giant grouper	香港 Hong Kong	✓
鯉魚 Grass carp	中國 China	✓
烏魷	香港	✓

### 避免 AVOID

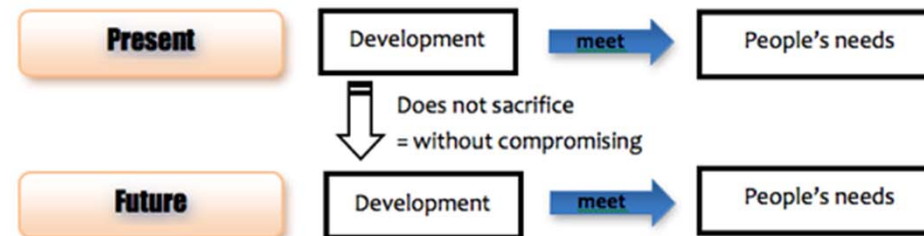
品種 SPECIES	來源 ORIGIN	方法 METHOD
藍星斑 Squirrel coral trout	東南亞 SE Asia	✗
老虎斑 Tiger grouper	東南亞 SE Asia	✗
大眼鰱 Bigeye	南中國海 S China Sea	✗
紅衫魚 Golden threadfin bream	南中國海 S China Sea	✗
馬頭 Horsehead	南中國海 S China Sea	✗
白鰻 Silver pomfret	南中國海 S China Sea	✗
福壽魚 Tilapia	香港 Hong Kong	✗
黃花魚 Yellow croaker	中國 China	✗
濶眼蝦 Mantis shrimp	南中國海 S China Sea	✗
海蝦 Shrimp	南中國海 S China Sea	✗
寶螺 Shrimp	亞洲 Asia	✗
紅花蟹 Red crab	南中國海 S China Sea	✗
響螺 Conch	美國 US	✗
墨魚 Cuttlefish	南中國海 S China Sea	✗
刺參 Spiky sea cucumber	日本 Japan	✗
魷魚 Squid	南中國海 S China Sea	✗

## F.2

### What is Sustainable Development?

“Sustainable Development” was raised and an internationally recognized definition was published in 1987 in < \_\_\_\_\_ > (《我們的共同未來》) by the World Commission on Environment and Development (聯合國環境與發展世界委員會).

“Development that meets the needs of the present without **compromising** the ability of future generations to meet their needs.”  
「既能滿足我們現今的需求，又不損害子孫後代能滿足他們的需求的發展模式。」



- ✎ This definition highlights the importance of \_\_\_\_\_.

This means the future generations should have the \_\_\_\_\_ to enjoy the same resource and the environment that we are enjoying now. Present generation should bear the \_\_\_\_\_ of the betterment of future generations when they are consuming resource now.

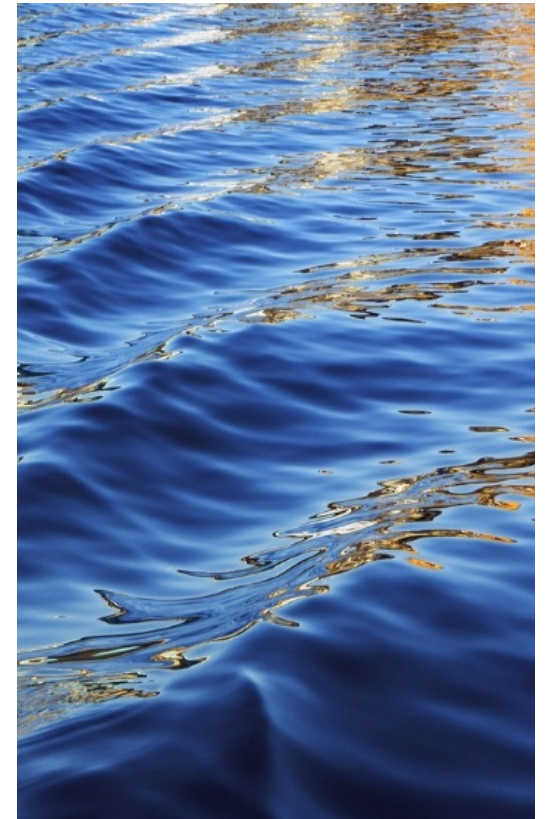
- ✎ Since human beings are \_\_\_\_\_ on the environment for a living, we have the right to protect the environment. If everyone considers the \_\_\_\_\_ of other people (including the future generations) and the impacts of environment before making any decision, \_\_\_\_\_ between \_\_\_\_\_ and human beings can be achieved.





# Senior Form

F4 – F6 Sustainable Development





# Discussion from the Bee Movie

Module 6: Energy Technology and the Environment  
Topic 1: Sustainable Development Form 4 Liberal Studies

**Bee Movie:** What is/are the implication(s) behind the following statements?



雲妮莎:「你憑咩認為佢條命比你條命貴?!」



蜂蜜農場的養蜂員:「佢地就做到癲,我地就賺大錢。」



雲妮莎:「你憑咩認為你條命比起佢條命貴?!」

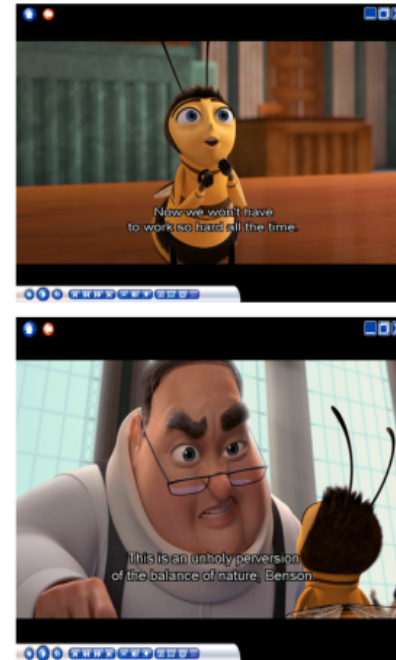


蜂蜜農場的養蜂員:「佢地就做到癲,我地就賺大錢。」

# Relationship between the nature and human beings



蒙哥馬利的開庭陳詞：  
「我婆婆係個簡單嘅女人，係農場出世，佢由始至終都衷心相信人類係有權享用所有上帝賜俾人類嘅大自然恩典。」



法官宣佈蜜蜂勝訴後...

巴里：我哋以後都唔駛咁辛苦做嘢啦！

蒙哥馬利：你哋咁樣做係扭曲咗大自然嘅平衡。你會後悔！

To conclude briefly,

The above common thoughts and value orientations of human beings are the reasons why it is so hard to maintain harmony between the nature and human beings.

## Group task

- Although Montgomery lost the lawsuit, the following scene shows his **strong argument** towards the issue.
- In a group of 4, explain his argument step by step with a **logical flow chart**.





巴里：我哋以後都唔駛咁辛苦做嘢啦！



蒙哥馬利：你哋咁樣做係扭曲咗大自然嘅平衡。你會後悔！



巴里：我哋以後都唔駛咁辛苦  
做嘢啦！ **Bees stop working.**



??????



????????????????????



扭曲咗大自然嘅平衡  
**distort the balance in nature**





That's pollen power. More pollen, more flowers, more nectar, more honey for us.

Honey bees are responsible for pollinating **one third** of the food we eat, like fruits, vegetables, nuts and seeds. If the pollination stops, most of the plants stop reproducing, which disrupts the balance of nature and we might face the problem of food shortage.

## Bees in Danger

少了嗡嗡聲 雪糕或停產 Haagen-Dazs 警告材料不足雪糕或加價

明報 20/2/2008

全球多處出現大量**蜜蜂**失蹤，不單止影響植物傳播花粉，連愛吃**雪糕**的好甜一族一樣受害。著名**雪糕**品牌 Haagen-Dazs 發出警告，由於「**蜜蜂**不見了」，旗下多款口味的**雪糕**面臨停產。Haagen-Dazs 又表示，美國三分之一食品供應需靠**蜜蜂**傳播花粉，包括各類蔬果及果仁，製**雪糕**的主要材料不足，或會推高**雪糕**售價。(國際組港聞組)

大量**蜜蜂**消失的現象 2006 年起在美國出現，成年**蜜蜂**在下一代出生前離開了蜂巢。有理論指出，這現象或因新病毒而起，亦有理論指現象由環境因素造成，如氣候暖化、基因改造植物、手機電磁波氾濫等。

缺**蜜蜂**傳花粉水果供應不足

美國去年大量**蜜蜂**神秘消失，連帶影響了食品業。Haagen-Dazs 警告，由於缺乏**蜜蜂**傳播花粉，旗下約 60 種口味的**雪糕**產品中，有四成口味面臨停產，當中包括受歡迎的口味如士多啤梨、烤胡桃及香蕉地等。

Haagen-Dazs 品牌經理蓋勒特 (Josh Gellert) 說：「**蜜蜂**減少令許多受歡迎的口味難以生產，如雲哩拿瑞士杏仁。」品牌總監皮恩 (Katty Pien) 說：「我們使用 100% 天然成分，如加州的士多啤梨、紅莓及杏仁等，**蜜蜂**減少影響了太平洋西北部的水果供應。」皮恩表示，希望科學家盡快解開**蜜蜂**失蹤的謎團，否則將重新檢討現在提供的味道，「我們必須供應充足，為顧客提供足夠選擇」。

捐款研究**蜜蜂**大失蹤原因

皮恩補充，Haagen-Dazs 已捐款 25 萬美元 (約 195 萬港元) 給加州大學戴維斯分校及賓夕法尼亞州州立大學，研究**蜜蜂**消失的原因。此外，為喚醒顧客對**蜜蜂**減少的關注，Haagen-Dazs 將重新推出經典口味「雲哩拿蜂蜜」味**雪糕**，並會把這種口味**雪糕**的部分收入撥作研究用途，「這是 Haagen-Dazs 首次面對這些問題，我們十分重視這問題，因它不止影響我們，更影響整個食品業」。Haagen-Dazs **蜜蜂**研究小組人員、佛羅里達州**蜜蜂**養殖場主管赫克堡 (Dave Hackenberg) 表示，很高興 Haagen-Dazs 帶頭研究**蜜蜂**減少的問題，希望其他公司會效法。

1

留條生路

大公報 14/7/2008

最近有人列舉數字，說近年全世界的蜜蜂愈來愈少。如果有天蜜蜂絕種，人類也會在四年內滅絕。大家一看這結論，都會笑一笑，哪有那麼驚人聽聞的事。但生態學家自有他們的一番道理。他們說：不單失去蜜蜂，而是因連鎖效應，接連失去一大批生物。我們很難想像蜜蜂平日為人類做了些什麼事。有一群生物學家拿著收集花粉的刷子，用繩索垂降到夏威夷的懸崖上，為一種即將絕種的植物進行人工授粉，做這種本來是蜜蜂分內的事。小飛蟲在懸崖邊上飛來飛去，多容易？現在卻要耗費多少人力物力和冒生命危險，甚至不一定能成功。



人類的糧食正面臨歉收之災，會不會跟小蟲減少有關。現在生物學家為即將絕種的植物延續後代，似乎可有可無；如果有一天要為絕種的主體傳授花粉，那就大件事了。若果今後傳授花粉成了人類繁衍抑或滅絕的大事，就笑不出來了。小鳥有個習慣：牠會啄吃苗圃裡的種籽，但當種籽發了芽，就不會碰幼苗，直到嫩芽長大結籽，又會飛來吃。這就是小鳥能生生不息的原因。是誰教牠們「留一手」，為自己留條生路？孟子見梁惠王時說：如果不以細密魚網放進池塘，魚鼈一定吃之不盡，在適當時節才砍伐樹木，木材也用之不竭。

現在我們連一分一毫也搜刮殆盡，凡事殺雞取卵，還能支配這個地球多久？

相關網站：

[www.helpthehoneybees.com](http://www.helpthehoneybees.com) (Haagen-Dazs)

1

## • Introduce concepts:

- Ecosystem
- Food Chains / webs
- Sustainability
- Sustainable Development



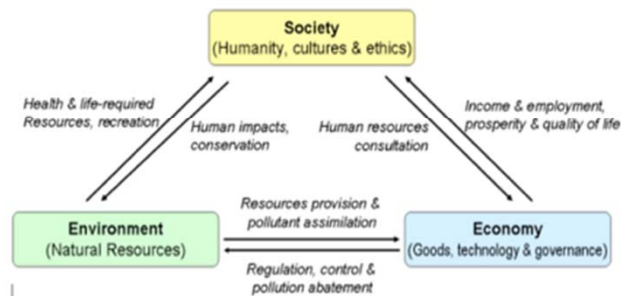
## Sustainability

### Definition

The World Commission on Environment and Development define 'sustainability' as the '**development that meets the needs of the present without compromising the ability of future generations to meet their own needs**' (World Commission on Environment and Development, 1987). Rather than being defined by certain actions or activities, sustainable development is a set of value, policy and practice at all levels from the individual to the international (Sustainable Development Communication Network, 2007)

### Dynamic balance of the three dimensions: Society, environment, and economy

The dynamic balance between social, environmental, and the economic aspects is essential in the context of development which meets the present need without compromising the ability of future generations to meet their own needs. The relationships between the three are illustrated in the diagram below:



(Source: The Sustainable Development Unit, 2006)

### Principles of sustainability

The principles of sustainability was defined by the National Round Table on the Environment and Economy (1994) as '**the ability of the natural world to regenerate itself**' and the attributes of '**fairness, equality, diversity and self-reliance within and among human societies**'.

### Historical background

Uprising of environmental and social concerns had led to various campaigns and foundation of related organisation during the 1960's and 1970's. Through various provisions of study, spectrums and perspectives

# Notes

### Definition of Sustainable Development in Hong Kong

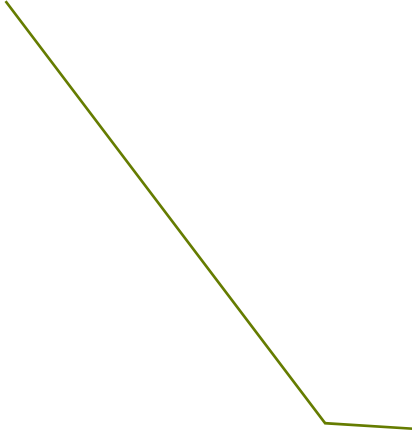
"Sustainable development in Hong Kong **balances social, economic, environmental and resource needs**, both for present and future generations, simultaneously achieving a vibrant economy, social progress and a high quality environment, locally, nationally and internationally through the efforts of the communities and the government."



In simple terms, sustainable development for Hong Kong means:

- finding ways to increase prosperity and improve the quality of life while reducing overall pollution and waste;
- meeting our own needs and aspirations without doing damage to the prospects of future generations; and
- reducing the environmental burden we put on our neighbours and helping to preserve common resources. ("1999 Policy Address")

Special attention is paid on **the inter-generation equity** in using the natural resources and the **harmony** between nature and the human beings.



For instance, by controlling the use of natural resources according to their **regeneration rate**, the needs of the future generations can be fulfilled.



It aims at **improving the quality of life while living within the earth's carrying capacities**. (在改善生活質素的同時，所消耗的天然資源**不超出**自然系統的**負載能力**。)

**Carrying capacity:**

- The maximum number of a certain living thing that an area (including land and water) can **accommodate** over a certain period of time.
- If natural resources are over-exploited or polluted, the carrying capacity of the area will be undermined.

# Applying the concept

## In-class activity

**Step 1:** List 10 items which are essential to a better life in Hong Kong from the \_\_\_\_\_ perspective/aspect.

- |          |           |
|----------|-----------|
| 1. _____ | 2. _____  |
| 3. _____ | 4. _____  |
| 5. _____ | 6. _____  |
| 7. _____ | 8. _____  |
| 9. _____ | 10. _____ |

### **Step 2:**

Work in group of 4. Identify conflicts between items that you and your group mates have chosen.

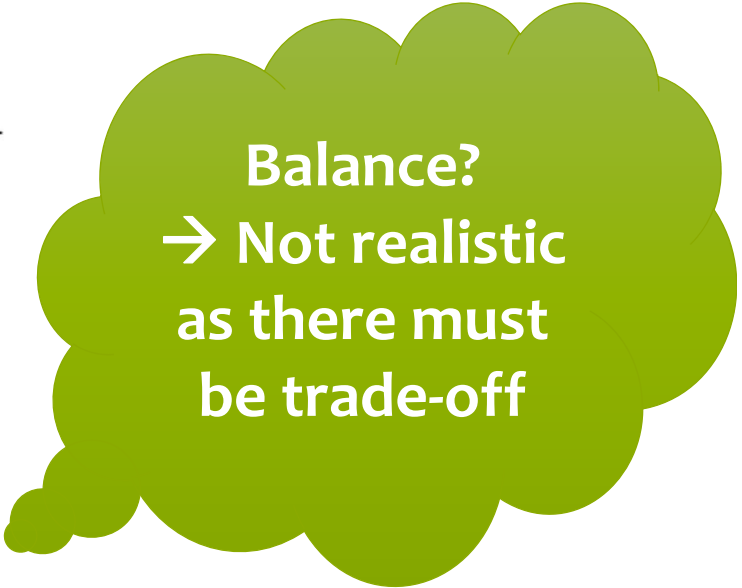
e.g. **“A” vs “B”** → I enjoy “A” in the expense of “B”.

i.e. having more “A” on one hand would lead to the decrease of “B” on the other hand.

**Step 3:** Work in group. Compromise on 5 items that all of you agree on.

- |          |          |
|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| 5. _____ |          |

Why do you choose the above 5 items? What are your criteria?



Balance?  
→ Not realistic  
as there must  
be trade-off



# Life Wide Learning Activities

Form 4 LS



# 1<sup>st</sup> and 2<sup>nd</sup> Term

## Life Wide Learning Activities

- Form 4 Life Wide Learning Days (2 days)
- Activities related to sustainable development
- Activities:
  - 馬屎埔村導賞活動
  - 打鼓嶺坪輦（東北）導賞活動
  - 古洞導賞活動
  - 馬灣發展導賞活動
  - 油麻地舊區再造導賞活動
  - 灣仔／中環文物保育（地區發展）導賞活動

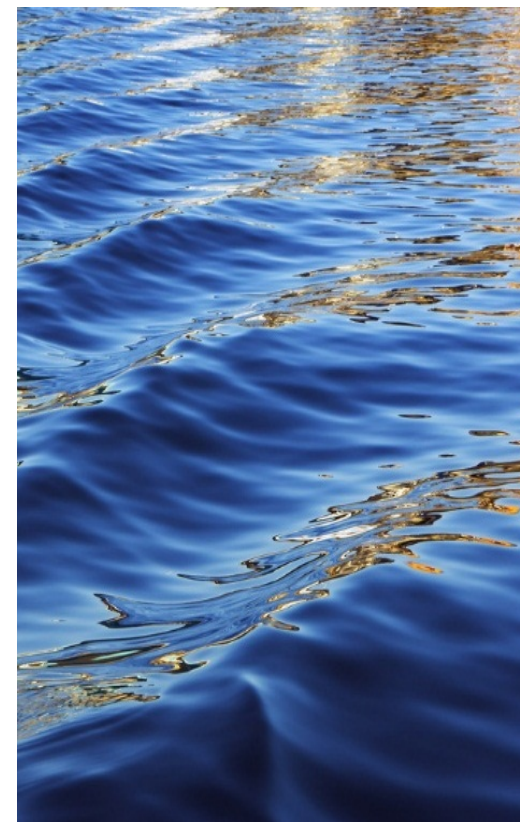
# In-class discussion

- Late 2<sup>nd</sup> term
- Topic: Quality of Life
- Use the cases as illustration
- All tours / cases are about development in Hong Kong
- Students are asked to evaluate whether these development projects are sustainable





# Teaching Tips



- Authentic experience
- Successful stories/projects included
- Actions can be taken
- Students' engagement

