Introduction: Our future and sustainable development

These pictures show a vision of Hong Kong’s future through the eyes of some primary school students. Not only do they wish to live peacefully in Hong Kong, they also want to live in a pleasant and green environment. The citizens born in Hong Kong in the 1960s and 70s have been working hard for economic development and they have less concern about quality of life. However, as Hong Kong’s economic development has become mature, fellow citizens have begun to realise the importance of the environment and the city space. Environmental protection is crucial if we are to make Hong Kong a better place to live in, and this can only be attained through concerted efforts in protecting the environment and creating a sustainable future for our next generation.

Source of picture: Information Services Department
The aim of the Environmental Campaign Committee in publishing this teaching material is to support the development and teaching of Liberal Studies in the hope that its educational elements can encourage students to:

- Seek and promote various means for sustainable development
- Understand the importance of environmental protection, and become willing to pay the price for it, such as by modifying their usual lifestyle
- Be responsible for protecting the environment
- Participate in the discourse about environmental policies as well as acknowledging the common right to enjoy an environment of high quality.

We also hope that the new generation of Hong Kong can develop a global vision in their environmental discussions through this teaching kit and become responsible citizens of the environment by putting the methods learnt into practice and help build a more liveable city.

Term explanation

“Liveable City”

According to the definition of the International Centre for Sustainable Cities (2006), a liveable city refers to a city in which environmental, economic and social aspects can develop in balance, so that citizens can live a healthy, convenient and high-quality life while being able to satisfy the demand for current and future development.

Hong Kong was ranked first as the most liveable city in the world by The Economist Intelligence Unit in July 2012. This year, the institution has added seven new criteria in their judging, including natural assets, cultural assets, green space, city planning, connectivity, prone to isolation and pollution. Hong Kong scored highly in city planning, prone to isolation, natural assets and green space. The well-designed transportation system and the dense development of the urban area allow 40 per cent of land in Hong Kong to be classified as country park and thus protected land; it is this preservation of green space which has helped the city to become the top of this ranking.

However, Hong Kong’s score on pollution is rather low. The implication of this is that it needs to be improved, and this will require the concerted efforts of the government and people from many different sectors.

Reference:


The Economist (2012.7.3), City Rankings: Hong Kong’s Best

The Economist Intelligence Unit (2012), Best cities ranking and report: A special report from the Economist Intelligence Unit
### Teaching arrangements

<table>
<thead>
<tr>
<th>Modules</th>
<th>Energy technology and the environment + Globalization + Hong Kong today</th>
</tr>
</thead>
</table>
| **Learning goal**                                                      | ● Understand the characteristics of Hong Kong’s environment and to grasp the core concept of this teaching kit as an introduction to later chapters  
● Get to know the characteristics of Hong Kong’s natural environment and the major environmental problems  
● Comprehend the impact of environmental problems on quality of life  
● Grasp the concepts of sustainable development, environmental justice and willingness to pay. |
| **Discussion**                                                         | 1. What are the characteristics of Hong Kong’s natural environment? What kind of environmental problems does Hong Kong face?  
2. What are the impacts of environmental problems to the citizens’ quality of life?  
3. What is “sustainable development”, “environmental justice” and “willingness to pay”? |
| **Suggested learning time**                                            | Five sessions (40 minutes each). If lesson duration is one hour, it is recommended to reschedule to four sessions. |
| **Generic skills**                                                     | ● Critical thinking |
| **Values and attitudes**                                               | ● Mutual reliability  
● Sustainable development  
● Responsibility |
### Suggested teaching sequences:

<table>
<thead>
<tr>
<th>Station 1</th>
<th>Station 2</th>
<th>Station 3</th>
<th>Station 4</th>
<th>Station 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge building (1): Urban development and environmental problems</td>
<td>Knowledge building (2): Characteristics of Hong Kong’s environment and its major environmental problems</td>
<td>Knowledge building (3): Grasping the core concepts</td>
<td>Class discussion: Plans for a third airport runway</td>
<td>Revision</td>
</tr>
<tr>
<td>Teaching period: 1 session</td>
<td>Teaching period: 1 session</td>
<td>Teaching period: 1 session</td>
<td>Teaching period: 2 sessions</td>
<td>Teaching material: Revision worksheet</td>
</tr>
<tr>
<td>Teaching materials: Basic information (1), PowerPoint (1), Worksheet (1)</td>
<td>Teaching materials: Basic information (2), PowerPoint (2), Worksheet (2)</td>
<td>Teaching materials: Basic information (3), PowerPoint (3)</td>
<td>Teaching materials: Class discussion worksheet, PowerPoint (4)</td>
<td></td>
</tr>
</tbody>
</table>
Station 1: Urban development and environmental problems

Basic information (1)

What is a city?

A city is a place for human living and activity built upon a natural environment which the city residents rely upon to survive. (Cunningham & Cunningham 2010). According to urban geographers, including Ian Douglas, a city’s operation involves a system which requires input of essential natural resources, such as coal and oil, to generate electricity for electronics and machinery, and rain collection, via reservoirs, to provide water for drinking and cleaning purposes, so as to satisfy residents’ daily living needs.

Electricity is provided to us at the turn of a switch and is used to drive machines and electronics. But how is electricity generated?

Hong Kong uses about 2.53 million cubic metres of water daily for drinking and cleaning. Where does the water come from? How is the water treated after use?

At the same time, the city needs to establish a means to deal with waste and pollutants created in daily life as well as the related environmental problems. These include building sewage-treatment facilities to manage used water, and flue-gas desulphurisation plants to reduce the sulphur dioxide (SO2) pollutants produced during electricity generation.

Teaching tips

Teachers may consider using the following to encourage students to think about the resources used and the pollutants and waste materials generated to satisfy the needs of daily life:

- Discussion with students using photos from PowerPoint (1) and Worksheet (1)
- Analyse news or research papers with students.

Teachers may introduce this topic and point out that there are 7 million residents in Hong Kong and how it inevitably leads to a range of environmental problems when the personal requirement for water and electricity and the waste generated is multiplied by 7 million.
Ensuring a good living environment for residents by managing the waste or pollutants generated as described above is the great challenge that urban development has to face.

Impact on and destruction to nature by urban life

In recent centuries, the world has undergone a process of urbanisation with the advent and development of technology and economic advancement. More and more people have moved from villages and rural areas to the cities and become an urban species (Boktin & Keller, 2011); the scope and amount of the urban areas have thus continuously extended and increased.

According to the United Nations Population Division’s statistics in 2005, 75 per cent of people in developed countries live in urban areas (Boktin & Keller, 2011).

In 2008, for the first time in history, more than half of the world’s population live in urban areas. It is estimated that by 2025, this figure is likely to reach three-quarters of the world’s population (Boktin & Keller, 2011).

From 1950 to 2005, the number of megacities with a population of more than 10 million rose from two to 22 (Boktin & Keller, 2011).
As the majority of the population in many countries lives in the cities, they have become the core and source of most of the environmental problems (Boktin & Keller, 2011). Until 2011, each inhabitant of city on average generated 1.66 million litres of sewage, 660 kg of solid waste and 200 kg of air pollutants yearly, all of which pollute the urban environment and make life unhealthy (Boktin & Keller, 2011). This indicates how the urban lifestyle leads to a number of environmental problems and why we need to create a more suitable urban environment for living by changing our current ways of development.

Supplementary knowledge:

City life has long brought with it environmental problems. In the Middle Ages in England, the city of York was already pointing out that the animal husbandry of the time polluted the environment. As pigs were allowed to wander at will and trash and waste water were thrown into the street, the excreta and offensive smells that resulted polluted the environment and deeply affected citizens (Mckay, Hill & Buckler, 1995).

Have modern cities solved such problems? It doesn’t seem so. In fact, due to the speed of development of modern cities, more and more environmental pollution is being generated. For example, following World War II, the rapid rate of industrial development and increase in vehicles in the USA, together with the general use of paints and solvents containing volatile organic compounds, caused a lot of harmful particles to be emitted into the atmosphere creating photochemical smog which permanently covered cities such as Los Angeles, Houston and Washington. In 2008, over 81 million residents of the USA were living in cities in which the ozone concentration exceeded the standard. This clearly shows the worsening pollution and harm to the environment caused by urban development.

Supplementary knowledge:

Due to the rapid pace of economic development in the Mainland, the rate of urbanisation in China keeps increasing. According to the data of the National Bureau of Statistics of China, the size of the urban population in the mainland in 2011 has surpassed the rural population for the first time. The percentage of the urban population has increased by nearly 10 per cent. For example, the population in the urban areas of Guangdong has reached 63 per cent of the total population of the province.

The high-speed of economic development has made its nationals much wealthier; the GDP now ranks 2nd internationally. But to achieve such rapid development, the environment has been sacrificed and a large amount of pollution has been created. In 2009, China’s carbon emissions already exceeded those of the USA, ranking the top around the globe.
What problems are brought by urban development to the environment worldwide?

With the speeding up of global urbanisation, environmental problems brought on by urban city life have increased proportionately. As countries continue to urbanise and urban populations exceed more than half of the national population, Chinese cities, including Hong Kong, have a duty to deal with environmental problems and to work towards global sustainable development as a member of the global village. So how should Hong Kong take up her responsibility and improve the city’s environment? How can we balance the duty of environmental protection and the need to live and develop?

**The growth of population and economic development is causing pressure on the environment**

According to statistics from the United Nations Population Division in 2011, the total population around the globe increased from about 5.3 billion to 7 billion between 1990 and 2010; the resulting increase in demand on natural resources has produced great pressure on the environment.

**Increasing amount of solid waste**

According to a report by the World Bank in 2012, from now to 2025, there will be a dramatic increase in the amount of solid waste produced by citizens worldwide, from about 1.3 billion tons a year to 2.2 billion tons a year. The annual cost of managing solid waste worldwide is estimated to increase from 205 billion USD at present to 375 billion USD.

**Worsening pollution of water resources**

According to statistics from UN Water, at present an average of about 2 million tons of sewage is discharged daily into rivers, lakes and oceans around the world.

**Human health is affected by air pollution**

According to the United Nations Environment Programme (UNEP), up to 2011, 1 billion people were exposed to the danger of outdoor air pollution. UNEP also stated that about 1 million children died annually because of urban air pollution. It is estimated to have caused a loss of GDP of 2 per cent and 5 per cent in developed and developing countries respectively.

**Problems of climate change**

According to the Intergovernmental Panel on Climate Change (IPCC), the average temperature worldwide has increased 0.13 degree Celsius every decade from 1956 to 2005; this increased rate is twice that of the previous century. Since 1978, the ice covering the North Pole has decreased by 2.75 per cent every decade, and the average temperature at the North Pole has increased by 3 degrees Celsius since 1980.
Supplementary knowledge

The urbanisation of the Mainland in recent years has also created various environmental problems as follows:

- **Continuous increase of solid waste**
  In 2011, the national industrial solid waste production reached 3,251.406 million tons, which means an average 0.52 million tons of solid waste is produced daily.

- **Worsening pollution of water sources**
  In 2011, the total amount of industrial and domestic sewage discharged reached 4.74 billion tons.

- **Air pollution problems to be solved**
  In 2008, the air quality of 46% of cities did not reach the second national standard; in 2011, 11% of the prefectural or above-level cities’ air quality still failed to reach the second national standard.

- **Continuous increase of solid waste**
  According to statistics from the International Energy Agency, China’s national carbon emission in 2009 reached 6.87 billion tons in total, ranking the highest in the world.

Striking a balance between the demand for national development and environmental protection has now become the nation’s top challenge.
Reference:


UN Water (2012), Water Pollution, Environmental Degradation and Disasters,


麗莎．班頓-修特和約翰．雷尼．修特,國家教育研究院主譯(2012): 《城市與自然》, 台北: 聯經出版。
**Hong Kong’s future and sustainable development**

Worksheet (1)

Please describe the cartoon in PowerPoint (1) in the following table.

<table>
<thead>
<tr>
<th>Natural resources input</th>
<th>Satisfying</th>
<th>Creating waste and pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g.: water</td>
<td>e.g.: drinking and cleaning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e.g. domestic sewage</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural resources input</th>
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</table>

| City                      |           |                              |
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| City                      |           |                              |
|                          |           |                              |
Station 2: The characteristics of Hong Kong’s environment and its main problems

Basic information (2)

As an international metropolis, Hong Kong, in its course of development and daily operations, inevitably causes environmental pollution. Our discussion will focus on:

1. Characteristics of the natural environment of Hong Kong
2. Relationship between natural environment and the development of Hong Kong
3. Environmental problems that Hong Kong has been facing

Characteristics of the natural environment of Hong Kong

<table>
<thead>
<tr>
<th>Location and climate</th>
<th>● Hong Kong is situated on the southeast coast of China and has a subtropical climate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topography</td>
<td>● The territory is rugged and hilly; the mountains are mainly formed of igneous rock.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>● Hong Kong is home to more than 3,100 species of plants, 50 species of mammals, 500 species of birds, around 80 species of reptiles and more than 20 species of amphibians.</td>
</tr>
<tr>
<td>Natural resources</td>
<td>● Hong Kong possesses negligible natural resources, such as minerals, oil and natural gas; it thus mainly relies on imports.</td>
</tr>
</tbody>
</table>

(Agriculture, Fisheries and Conservation Department, 2012)

Let’s think:

Where do these plants and species inhabit? What are the impacts of urban development on them?

Hong Kong is lacking in natural resources. What are the impacts on electricity generation and industrial development?
The relationship between the natural environment and the development of Hong Kong

Hong Kong’s topography and natural environment have brought both benefits and limitations to its development. Its natural features have shaped the uniqueness of the city’s development.

Land resources
Hong Kong’s land resources are limited. It possesses a land area of about 1,104 km². However, much of this area is rugged and hilly, which means the actual land area available for citizens to live on is about 263 km². Of the remainder, more than 500 km² of land is zoned as “protected areas”, which includes country parks, special areas and conservation areas.

This limitation of developable land has resulted in tension among the populace, and a clash between humans and nature, sometimes generating into conflict. The total population of Hong Kong is now 7 million and the overall population density is 650 per km² and 54,530 km² in urban area such as Kwun Tong. The living area for citizens is relatively small.

When any new large-scale infrastructure needs to be developed, it is inevitably that it has to be located near to residential area, on re-zoned rural land, or on reclaimed land. This often causes conflict between urban development and environmental protection.

Fresh water resources and sea water resources
Hong Kong’s drinking water is obtained from two main sources: rainwater collected in local catchment areas and drinking water imported from Guangdong Province.

Rainfall in Hong Kong is inconsistent, but the average annual rainfall of 2,399 mm is normally sufficient. However, as most of the 1,104 km² land area of Hong Kong has a rugged relief, rainwater collection and storage is indeed a big challenge. Since the completion of the High Island Reservoir in 1978, the annual amount of water obtained through the local collecting system represents about 20–30 per cent of the current usage of fresh water. Hong Kong now relies on imported water from Dongjiang in Guangdong Province to meet the balance.

For sea water resources, Hong Kong has a territorial sea area of about 1,650 km². The fresh water from the Zhujiang (Pearl River) mainly affects the western side of Hong Kong’s waters. With abundant sea water resources in Hong Kong, desalination of sea water offers an alternative for a reliable water supply. The study of desalination has confirmed the feasibility of adapting desalination in Hong Kong. Detailed planning and testing will begin soon to study the feasibility and cost of building a desalination plant in Tseung Kwan O. In order to minimise the use of our precious water resources, Hong Kong’s urban area and most of the new towns use sea water for toilet flushing, covering about 80 per cent of the total population. This will be extended to 85 per cent in the near future.

Domestic and industrial sewage is usually collected via drains and discharged into the sea after treatment. Domestic sewage that has undergone secondary sewage treatment goes through further purification and disinfection to become “recycled water” which may be used for toilet flushing, irrigation and other non-drinking purposes.
Connection with Mainland China
Hong Kong is situated on the east side of the Zhujiang Estuary, with a land connection between the New Territories and Shenzhen in Guangdong Province. This proximity facilitates the flow of people and the import of Mainland resources (e.g. natural gas, Dongjiang water). For this reason, the Mainland’s pollution problem severely affects Hong Kong. For example, the pollutants emitted by more than 56,000 factories in the Zhujiang Delta are carried to Hong Kong and worsen the air quality. Therefore, where we deal with the environmental problems of Hong Kong, conditions on the Mainland have to be considered as well.

Guidance for teachers
The information below may be quoted during teaching, with the aid of examples, to encourage further discussion among students about the relationship between Hong Kong’s urban development and its environmental problems.

1. The preservation of green areas:
High density development has been Hong Kong’s main direction of town planning. The 7 million citizens live on only 20 per cent of the total land area. This approach has two main strengths:
- 70% of the rural area is preserved, avoiding vast land development;
- The centralised transportation network shortens transport distances, thus helping to reduce carbon emissions.

2. The lack of urban space
The direction of town planning also leads to vertical development of Hong Kong buildings, as well as reducing the distance between buildings, roads and facilities. This results in a lack of living space which causes many limitations and conflicts. There is no standard solution to these problems.

Teachers may make use of the following example to stimulate students to explore the topic in-depth:
The photo on the right shows a view of Hong Kong Island along Victoria Harbour. Behind the area packed with buildings is actually much greenery. Some believe that “protected” land should be developed in order to extend the living space for citizens and improve the quality of living, especially the urban areas are so crowded. However, others point out that the density of high-rise buildings is the reason why most of the rural areas on Hong Kong Island have been preserved. Teachers may invite students to share their views of this photo and lead them to think about the following questions:

● If living space was to be increased, more land would need to be developed for housing. Could Hong Kong’s rural areas be preserved?

● How about the animals and plants now inhabit and grow in the areas being considered for development? Could they be properly resettled?

● Is there any other way to meet the demand of Hong Kong’s population growth and economic and social development without undergoing reclamation and rural area development?

The cramped living space of Hong Kong citizens also has a knock-on effect on their attempts to protect the environment, such as:

● Should we turn on the air conditioner, or choose other alternatives to deal with the heat when living in a cramped environment with poor ventilation in summer?
Environmental problems that Hong Kong has been facing

The major environmental problems of Hong Kong are described below:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid waste</td>
<td>● Hong Kong now disposes of about 13,800 tons of waste each day comprising about 9,100 tons of municipal solid waste, of which 3,200 tons are food waste. Besides, there are 3,600 tons of construction waste, 900 tons of sludge and 200 tons of other waste.</td>
</tr>
<tr>
<td>Sewage</td>
<td>● By the end of 2009, the sewage generated in Hong Kong each day amounted to about 2.9 million m$^3$, sufficient to fill 1,160 standard swimming pools. The main sources of sewage are domestic and industrial, as well as from livestock farms. In addition, sewage discharged in the Mainland may also affect the water quality of Hong Kong.</td>
</tr>
</tbody>
</table>
| Air pollution       | ● The local roadside air quality improved slightly between 1999 and 2010, with 30–63% decrease in inhalable particulates, sulphur dioxide and nitrogen oxide. However, the level of roadside nitrogen dioxide increased by about 18%. There was also a 10% increase in regional ozone from 2006 to 2010.  
● According to the World Health Organization’s ranking of PM10 particulates in 1,083 cities worldwide (ranked from the least to the most), Hong Kong ranked a poor 894th. |
| Carbon emission     | ● Hong Kong emitted 33.3 million to 43.4 million tons of CO2e on average every year from 1990 to 2008; the emission per capita was 5 to 7.4 tons, and the local carbon intensity (which is the carbon emission rate of each unit of GDP) is 0.025 to 0.048 kg.  
● The total amount of Hong Kong’s carbon emission in 2008 was about 42 million tons of CO2e, which means the emission per capita was 6 tons. |
| Energy generation   | ● Due to the lack of natural resources, Hong Kong has long relied on imports of energy resources to generate electricity. In 2009, of the different fuels used for electricity generation, coal accounted for the largest portion (about 54%), with natural gas (about 23%) and nuclear power from the Mainland (about 23%) making up the rest.  
● Greenhouse gases produced during the process of electricity generation constituted 67% of Hong Kong’s carbon emission in 2008. Major air pollutants, including carbon monoxide, methane and nitrogen oxides, have also contributed to worsening air pollution. |

**Teaching tips:**
Teachers may make use of the Worksheet (2) to discuss the environmental problems in Hong Kong and their own experiences. Teachers may also invite two or three students to share their views afterwards.

**Term explanation:**
Carbon dioxide equivalent (CO2e)
The calculation of the total emission of a certain or all greenhouse gases' potential in bringing a warming influence; it is obtained by multiplying the total gaseous emission by the global warming potential.
List three environmental problems in Hong Kong and try to describe:
1. their impacts on the quality of life; and
2. your personal experience of their environmental problems.
Station 3: Grasping the core concepts

Basic information (3)

The worsening global environmental problem has raised alarm around the world. By looking at climatic changes, scientists have already reached a consensus on the danger of a further global temperature increase; should temperatures exceed the “climatic critical point”, the Earth’s ecology would then enter an irreversible situation. “Sustainable development” is viewed as one available method to solve this danger; it would bring changes to current human development methods and help to prevent the environmental problem from worsening. In dealing with environmental problems, the concept of “environmental justice” may help us comprehend the benefits, rights and relations of different groups; while “willingness to pay” may enable us to understand what values different sectors of society would tend to opt for when facing environmental protection policies and measures. However, to put these concepts into practice requires mutual bearing and participation of different “stakeholders”. The concepts “stakeholders”, “sustainable development”, “environmental justice” and “willingness to pay” are described in the following pages.

1) Stakeholder

A “stakeholder” may also be referred to as “interested parties”, and means those individuals or groups who have related benefit links and considerations in a case or an issue. In the modern management model, when the government has to discuss and make decisions on a certain case or issue, it is essential to consider and consult the opinions of these individuals or groups.

The following example illustrates the importance of “stakeholder” in the discussion and decision on environmental issues:

**Case: Airport extension plan in Frankfurt, Germany**
(CUHK Research Institutes & Centres, 2012)

In 1997, the Frankfurt am Main Airport in Germany announced that a fourth runway was needed as the capacity of the airport had almost reached saturation. But the airport authority decided that the extension plan first needed to go before different local sectors, including the community and environmental groups. Before the Hesse government, which controls Frankfurt, made any decisions about approving the construction of the fourth runway, a mediation group with a broad representative base was set up as a discussion platform for different stakeholders. Through this group, the airport hoped to improve communication with the stakeholders and to explain queries about the airport extension plan.

From 2000 to 2008, different stakeholders, including the aviation sector, the government, the business sector, environmental protection groups, the church, the labour union and community groups – a total of over 150 participants – joined the regional forum in order to voice their respective views on the airport extension project. To deal with the specific issues, the central forum set up five topic groups to discuss specific topics viz “Enhancing the current system”; “Forbidding night flights”; “Anti-noise agreements”; “the Airport’s perspective”; and “Ecology and health”.

Although the consultation period was very long because of the need to allow thorough discussion, it took care of the needs of different stakeholders and helped the plan to progress smoothly. This case shows the importance of considering stakeholders’ benefits and opinions when dealing with development plans which are related to the environment.
Guidance for teachers

Teachers may use the following example to guide students in thinking about the different stakeholders in environmental issues:

The Hong Kong Airport Authority (HKAA) started a 3-month public consultation on "Hong Kong International Airport Master Plan 2030" in June 2011, with activities including an exhibition tour, public forum, and professional groups and stakeholders’ conference. Their purpose was to enhance public understanding of the master plan, and to solicit the opinions of the public and stakeholders. The HKAA and aviation sector both agree with building a third runway; they believe it could increase Hong Kong International Airport’s ability to cope with passenger and cargo flow, and consolidate Hong Kong’s place as an international flight hub, thus bringing Hong Kong huge economic benefits.

However, some stakeholders have reservations about the proposal; these include environmental protection groups, Tung Chung residents and policy concern groups who have certain criticisms about the plan. They say that relevant information has not yet been fully disclosed, notably the contents of the consultancy report, and that there are biased calculations of the economic benefits for a third runway without calculating its social cost etc.

Discussion:
1. What are the considerations of these stakeholders? How would these considerations affect their opinions of the airport plan?
2. If you were the managing party of the HKAA, how would you balance the different opinions of the different stakeholders in the plan?
Teaching and learning strategy:
“Stakeholder Analysis”, especially when applied in liberal studies, means to guide students into analysing and understanding the opinions of individuals or groups who are of different backgrounds, have different influences, are in different situations and have different interests in these policies, issues or cases. This teaching kit’s suggestion is that when teachers are guiding students in using this method, especially for students who have just moved up to Form 4, they may start by finding and explaining some relevant current news. The process may include the following three steps:

1. Background characteristics of stakeholders
   Understand and make a list of the characteristics of stakeholders, including their background, identity, situation context, interests in and impacts affected by the related policy, issue or case.

2. Stakeholders’ stance
   In this step, students should try to link together the related stances, viewpoints and expectations with the background characteristics listed in step one, then sort and analyse the items.

3. Arguments raised by stakeholders
   Understand and list viewpoints, reasons, data and various proof stakeholders used to support their stances.

After grasping the above sorting method, teachers may guide students to put different stakeholders’ opinions together, and attempt to evaluate, criticise and analyse the policy, issue or case.
2. Sustainable Development

The definition of “Sustainable Development” is “a development mode that can both meet our current demand, which would not harm the future generation, and can satisfy their need” (World Commission on Environment and Development, 1987). This development mode:

- Ensures humans have the right to use the natural environment and resources in order to satisfy their daily and development needs (World Commission of Environmental and Development, 1987)
- Believes that humans should protect the environment in order to allow future generations to continue using the natural resources (World Commission on Environment and Development, 1987)
- Encourages humans to find a balance between economic and social development and the environment in order to ensure the well-being of the present and future of everyone.

To attain sustainable development, we have to reach a balance in the following three aspects (ICUN, 2006):

<table>
<thead>
<tr>
<th>Environmental and Ecological</th>
<th>Reduce the harm to the environment; protect the environment and natural resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Promote human development, raise the quality of life, and establish a fair society and political system</td>
</tr>
<tr>
<td>Economic</td>
<td>Satisfy basic material and daily needs, enhance economic and technical development</td>
</tr>
</tbody>
</table>
Teaching and learning strategy:
When guiding students in environmental issues, teachers may use the concept of sustainable development to encourage them to analyse the environmental, economic and social aspects, list out the elements and influences involved in the three aspects, and attempt to:

1. Analyse the dynamics between the environmental, economic and social aspects in that issue, such as their mutual influence.
2. Compare whether the influence of the three may reach a balance, or is currently in imbalance, leading to the domination of a certain aspect.

Case: Taiwan’s “Sustainable Island” vision
(Zhang Ruigang, 2012)
In order to answer to the “Rio Declaration” in 1992 and to reach a balance between social, economic and environmental issues, Taiwan announced its “Sustainable Island – Taiwan” vision, setting up a National Council for Sustainable Development in 1997, and set a “Sustainable Development Policy Programme” in 2009.

This programme aims to create an efficient, low emission and low-reliance “energy consuming mode and supply system”, while at the same time ensuring management of air, water, land, ocean, biodiversity and environment, and attempts to create a balance between the environment and the economy through management and monitoring.

In order to promote a sustainable development policy, the Taiwan government on the one hand controls the load of the environment, while on the other it plans and improves the rural view and public facilities, as well as develops renewable energy. It is estimated that renewable energy may provide 15.1 per cent of Taiwan’s total electricity generation in 2025, reducing carbon emissions to the level of that of 2000. At the same time, Taiwan is working hard to raise the standard of the waste-gas emission of vehicles, requiring factories to increase the production rate of pollution-free vehicles, and encouraging the public to purchase electric or hybrid cars. These measures all aim at ensuring that Taiwan’s current and future public may enjoy a “comfortable and biodiverse ecological environment”, “energetic, open and prosperous economy”, “safe, harmonious and well-being society” so as to balance the development of the environment, the economy and society as much as possible.
Case: Green Building
The Hong Kong Government has built a “green” municipal service building in Siu Sai Wan. As a green building, it has applied several technologies to reduce its overall energy consumption:

- The design of the podium promotes natural wind and makes good use of sunlight, reducing the total energy consumption.
- The mass installation of controllable windows, insulated glass and external sun-blocking items, matching the route of the sun’s movement, reduces heating of the building by the sun.
- It has an insulating green roof.
- It uses a circulation system of rainwater and grey water to irrigate the green roof.
- Escalators work according to demand and use light-sensors to control lighting.

This building has provided a place for both leisure and recreational activities, thus improving quality of life, and by its advanced design and technology, minimised its consumption of natural resources and harm to the environment. By taking both the social and environmental aspects into account, it has achieved a suitable balance between human daily need and environmental protection, matching the principle of sustainable development.

Guidance for teachers
Teachers may use the case, or other current news and issues, to discuss with students whether these examples can strike a balance between the environment, economy and society.

Questions for discussion:
1. Do you think these examples succeed in reaching a balance between the environment, economy and society? Why?
2. Sustainable development focuses on the balance between the environment, society and economy. If one element dominates over the others, what impact would it bring?
**Information for teachers**


- To strike a balance between the environment, society and economy, the UN World Commission on Environment and Development also proposed considering three important principles:

<table>
<thead>
<tr>
<th>Equitable</th>
<th>During the process of economic development and environmental policy drafting, all people should be allowed to join fairly, and ensure a fair allocation of resources and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viable</td>
<td>The environmental protection measures and policies have to be practical, so as to avoid damage to the economic and basic material demand</td>
</tr>
<tr>
<td>Bearable</td>
<td>Social development should put the environment’s tolerance of loss in mind, ensuring that nature can recover.</td>
</tr>
</tbody>
</table>
The concept of “sustainable development” has become the long-term target of many nations and regions. In the UN’s Millennium Development Goals, to “ensure environmental sustainability” was included as one of the targets. It has also indicated that it will introduce the principle of sustainable development into policies and plan-making.

In recent years, Hong Kong has also actively promoted sustainable development. The Policy Address, 1999 had already defined the meaning of sustainable development in Hong Kong as:
- While searching for a prosperous economy and improvement in quality of life, reduce pollution and excess waste
- In satisfying our various needs and expectations, do not harm the benefits for future generations
- Reduce the environmental burden to neighbouring regions by protecting the resources we own together
- The Hong Kong government also encourages citizens, the business sector and people from other sectors to cooperate in enabling Hong Kong to reach sustainable development, and thus make Hong Kong a tidy, comfortable, wonderful home that its citizens can be proud of.

Reference:
3. Environmental Justice

The main content of “Environmental Justice” is as follows:

- Respect and uphold the right of different groups to enjoy a healthy environment and to participate in decision-making of environmental issues;
- Show concern for the under-privileged, such as the ethnic minorities and grassroots, that they are not ignored or deprived of their right to enjoy a safe and healthy environment.

We may use the following case to explain the concept of “environmental justice”:

Case: Global Commons Institute’s plan for each nation’s reduction of emissions

Even though the economies of developing nations such as India and Brazil have been growing rapidly, resulting in an increase in their total carbon emission, the difference between their economic development and quality of life means the emission per capita is still markedly different from that of developed countries. For example, India’s carbon emission per capita is only one ton, but in the USA, the emission per capita is 20 tons. There are critics therefore who think it is unfair to ask developing countries to reach the same goal on emission reduction as developed countries, as it ignores the need for economic development of developing countries and their right to improve their quality of life.

For this reason the Global Commons Institute issued a plan titled “Contraction and Convergence” in 1997. According to the plan, all nations have to set a goal together for emission per capita over a certain period; then starting from their real emission rates, developed nations should gradually reduce their emission per capita, while developing countries can gradually increase theirs. Once the planned year is reached for the convergence of global emission per capita, they will continue to reduce emissions together, achieving the ultimate goal of emission per capita around the world through “tightening”.

Under this policy, nations can both reach their goals on emission reduction and take care of the economic needs of developing countries, and thus ensure the needs and rights of developing countries in economic development.
Case: Junk hill
In the slums of Phnom Penh, Cambodia, a hill of junk has evolved from the waste of the capital, Phnom Penh. The trash has been there a long time, diffusing a toxic and smelly odour. Despite this, several local poor make a living by sifting and collecting the trash, facing the risk of damaging their health. This is an example of how cities often divert their pollution to rural and slum areas, making the latter bear the price.

Guidance for teachers
Teachers may use the following example and encourage students to think about the importance of "environmental justice":

In recent years, many developed countries have suggested using crops like corn as raw material to generate bioenergy in order to tackle the problem of diminishing energy resources. This encouraged a number of developing countries to shift to massive planting of crops for bioenergy generation (such as cereals, palms and Jatropha curcas), which are then exported to European and American countries. Massive planting of corn and sugar canes in Central America has taken place to provide the biomass alcohol for American petrol engines; while Southeast Asian regions have begun massive planting of palms to provide the raw material for biomass diesel fuel for Europe.

While such large-scale planting of bioenergy crops increases the export income of these regions, it also leads to an assortment of environmental problems. For example, in Southeast Asia, a large area of forest has been cut to plant palms, leading to loss of soil and water and damaging the ecology. Pesticides and fertilisers used in the massive planting of crops like corn have also directly polluted the soil and got into underground water via infiltration. The large-scale planting of bioenergy crops, or exporting crops for bioenergy use, also reduces the amount of food produced, causing price rises and creating serious food provision problems in developing countries, such as Mexico, for whom corn is a staple. Mexicans held a huge mass demonstration in 2007 because of the enormous rise in the price of corn after its use for bioenergy.

Facing environmental problems brought about by global farming production, many groups are exploring sustainable methods. Some groups promoting fair trade have encouraged local farmers in developing countries to make use of organic planting methods, reducing the use of pesticides and fertilisers, in order to reduce damage by the crops to the local environment and to avoid harming local lives by healthier farming methods.

Discussion:
1. What are the impacts on the living environment of locals as developing countries massively plant bioenergy crops for export?
2. If you were a government official in a developed country, do you think you should bear any responsibility for the environmental problems in developing countries? If yes, how would you deal with these problems? Why?
The concept of “environmental justice” has also helped us to consider the way to deal with the benefits for and relations between different groups on environmental issues, and thus to achieve real sustainable development. Here are some examples of environmental justice:

<table>
<thead>
<tr>
<th>Area of Environmental Justice</th>
<th>Examples of involved topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intergenerational environmental justice</td>
<td>When satisfying a city’s development and demand, will it affect the usable environmental resources available for the next generation? E.g. excessive use of non-renewable energy.</td>
</tr>
<tr>
<td>Environmental justice regardless of class and income</td>
<td>When developing the environment, has the benefit of those with lower economic status taken care of? E.g. developing a highly polluting factory in a poor neighbourhood.</td>
</tr>
<tr>
<td>Environmental justice across countries</td>
<td>When developing the national economy, will pollutants be transported to other countries? E.g. transporting electronic trash to other countries.</td>
</tr>
<tr>
<td>Environmental justice regardless of race and colour</td>
<td>When developing the environment, have the rights of ethnic/indigenous inhabitants taken care of? E.g. not setting a policy to protect the land of indigenous people.</td>
</tr>
<tr>
<td>Environmental justice to nature</td>
<td>When developing a city, will the waste created be disposed of in the natural environment? E.g. discharging factory pollutants directly to rivers.</td>
</tr>
</tbody>
</table>

Specific to Hong Kong, teachers may also lead students to think about the following questions with the concept of environmental justice in mind:

- During the process of urban development in Hong Kong, have the poor or communities living in remote areas been made to bear the result of environmental pollution?
- How can we protect the rights of different groups to enjoy a fine environment?
- When setting and deciding environmental policies and measures, how should we put the participation of the different groups into practice?
Learning and teaching strategy
Teachers may make use of the concept of environmental justice to analyse environmental issues, first by listing the involved parties’ identity or species, then by evaluating whether they benefit or are harmed.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Benefited</th>
<th>Harmed</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. Building a dam for</td>
<td>e.g. residents in distant</td>
<td>e.g. displaced residents, plants and</td>
</tr>
<tr>
<td>hydroelectric generation</td>
<td>towns</td>
<td>animals in the drowned areas</td>
</tr>
</tbody>
</table>

Based on the level of benefit or harm, evaluate whether there are situations of injustice or violation, determine whether the different genders, ethnicities, religions, hierarchies, social statuses or cultural backgrounds are protected for their right to enjoy a safe, healthy and sustainable environment.
The concept of “environmental justice” originates from the mid-1980s when the people of colour in America protested that the government was always disposing of trash in areas where they lived. Later, this term was also used when objections were raised that the American government stored most of the country’s toxic waste in areas where ethnic minorities lived. It was seen as a measure of prejudice against ethnic minorities and one that ignored their right to a quality of living in terms of environmental problems.

In order to understand “environmental justice”, the concepts of “justice” and “equity” have to be clarified:

**Equity**
- Everyone has the same right when setting environmental policies and measures
- Everyone’s interests and needs have to be viewed as equally important, regardless of colour, race, background or age

**Justice**
- The interests and needs of the minorities or the weaker groups cannot be sacrificed or ignored for the majority
- Not only is everyone’s equal right respected, but procedural justice are emphasized when setting environmental policies and measures and distributive justice for environmental resources and consequences.

America’s First National People of Color Environmental Leadership Summit issued the Principles of Environmental Justice in 1991, establishing the basic content and principle of environmental justice:
- Acknowledging the preciousness of nature and the mutual reliance of all life forms, which all have the right to be free from harm, should be protected
- Everyone, regardless of gender, ethnicity, religion, hierarchy, social class or cultural background, all have the right to enjoy a safe, healthy and sustainable environment, and nobody has the right to take away or damage this right of others
- Violence towards ethnic minorities and other lives, as well as the wilful exploitation of nature should be prohibited
- The use of natural resources should be based on a balanced, ethical and responsible attitude in order to protect the well-being of human and other life forms
- Everyone has an equal right to join in and decide on the setting of environmental policies and decision-making over environmental problems

The United States Environmental Protection Agency (USEPA) suggested the definitive definition of “Environmental Justice” in 1997. According to this definition, “environmental justice” means “when developing, putting forwards and operating environmental laws, regulations and policies, giving a fair treatment to everyone, regardless of race, colour, nationality, or income; everyone has a meaningful involvement in it”. “A fair treatment” means “nobody should bear … the inappropriate and negative consequences brought upon the environment by various policies”. As we can see, “environmental justice” is more concerned about the rights and interests of the minorities and weaker communities.
4. Willingness to Pay

The way people live and the demand for development often come into conflict with the work of environmental protection. When such conflicts occur, are we willing to pay the price in order to better protect and improve the environment? The following introduces an important concept which has grown in recent environmental issues – “willingness to pay”. It will help students to examine the price of development and environmental protection when analysing related policies, issues and cases.

Willingness to pay and environmental issues

Cultural economist David Throsby said that something’s value is based on whether people think it is worth having compared with other things and whether they are willing to give up or sacrifice these other things for it. Based on this viewpoint, “willingness to pay” is the people’s preference for something; they regard it as being more valuable than other things, and are thus willing to pay for it or make a sacrifice for it. In environmental issues, it can be expressed as follows:

- As a consumer, in comparison to economic and social interests, does environmental protection have a higher value?
- Are you willing to pay for environmental policies and measures?
- How much will you pay for environmental policies and measures?
We can use the following example to elaborate:

**Case: European industrial and business sector’s willingness to pay for emission reduction**
(Thomas L. Friedman, 2008)

In the past, developed countries were profligate users of energy. In exchange they gained a rich and convenient lifestyle. The price for this is an increase in carbon emission and a reduction in available usable resources for the future. In facing the problem of global climatic change, the most obvious solution for developed countries is to change their development model and living style.

However, developed countries are not willing to completely give up the lifestyle to which they are accustomed or development enterprise for environmental protection. The EU in 2008 proposed introducing an emission reduction plan to lower the carbon emission rate by 20 per cent by 2020. This efficiency plan was rejected by the industrial and business sectors who considered the cost for it was too high and would affect their competitiveness in the world market. They argued that industries which require a large amount of energy (such as the steel industry) might eventually be forced to move out of Europe. The plan was set aside because of objections from various quarters.

Therefore, if the European industrial and business sectors were willing to increase their operating costs and change their development methods to reduce emissions, the extra cost and price they would have to pay (including the potential weakening of their competitiveness and the added cost needed to increase the reduction rate) would reflect their willingness to pay for the measure of increased carbon reduction.

**Teaching tips:**

Teachers may use this case, or other recent news or current issues, to guide students in thinking about the importance of “willingness to pay” in environmental issues:

**Discussion:**

1. Who do you think should bear the cost of environmental policies and measures: the government, the industrial and business sectors, or the citizens?
2. If a part of the costs of these policies and measures inevitably has to be transferred to the citizens, are you willing to pay for this cost? Why?
The concept of “willingness to pay” may help us understand why when promoting environmental protection measures the public may seem to support environmental protection, but are less enthusiastic and raise objections to it when they see that these measures will change their own living habits.

The concept of willingness to pay also comes into being when there is a conflict between cost and environmental protection. Which do citizens value more? If they are more concerned about their own wealth or enjoyment, they are likely to reject government policy or object to paying the cost. If environmental protection is their priority they are likely to be more willing to pay the higher monetary price. The economic incentives of this price may also make citizens change their day-to-day habits to avoid paying the price. This concept may therefore help us think about how much cost we are willing to bear, and who or what should bear it. Many examples can be found in daily life, such as:

- Are you willing to change your living habits by reducing the use of disposable dining utensils and bringing your own utensils to reduce the consumption of resources (e.g. plastic and energy) so that sustainable development may save the environment?
- Are you willing to pay extra by choosing energy-saving, but more expensive, electronics in order to save energy?
- Are you willing as a consumer to bear a higher energy cost by using renewable energy or natural gas for electricity generation to reduce carbon emission?
- Do you agree with paying for the operational cost of such policies, but think that certain sectors have a greater responsibility to pay the cost, such as the industrial and business sectors?

Learning and teaching tips

1. Teachers should encourage students to consider the interests of different stakeholders in environmental issues so they can analyse which factors each stakeholder tends to value the most.
2. Teachers may also suggest that students balance each measure's positive influence with the corresponding price to pay and decide which is closer to the balanced principle.
Values are the foundation of attitude and faith, providing standards for personal behaviour and decisions. Values help us judge what more important. Our actions are based on these ethical standards or values.

Willingness does not only mean what we can do, but also what we want to do based on our personal hopes, interests and attitudes.

We must note that in environmental issues, besides environmental protection, there are other pursuits of values, such as personal enjoyment. When making a decision, these values always conflict with each other and force us to decide which value should be given greater emphasis.

- Willingness to pay is counted by the price willing to be paid. In environmental issues, it has a value which may be described as follows:
  - Value means the things people are willing to give up or sacrifice in order to possess or maintain something they think has a higher value
  - Value can be measured by shadow pricing. For example, if citizens could decide for themselves, how much would they be willing to pay for clean air?
  - Value is the cost needed to pay for imposing environmental policies. This cost is the price of the policy.
Factors that may affect the willingness to pay include the following:

- The wealth people possess; that is their ability to pay
- The aggregate demand of people for certain things
- The benefit people may gain from something
- The cost, including money and opportunity cost.

Opportunity cost is what we have to give up or sacrifice in order to gain something. For example, to alleviate the problem of carbon emission, we have to drive private cars less frequently, buy fewer imported goods, use less air conditioning etc. This sacrifice is the opportunity cost. If we value imported goods, then not buying them is the opportunity cost for alleviating the problem of carbon emission.

Term explanation

**Shadow pricing**

(Wright, 2005)

In environmental issues, a shadow price is an estimate of the cost needed to gain something (where the value cannot be determined by economic factors alone). If people are willing to pay $10 a month for a better living environment, $10 would be the shadow price they are willing to pay.

Term explanation

**Opportunity cost**

(Field & Field, 2006)

Opportunity cost is what we have to give up or sacrifice in order to gain something. For example, to alleviate the problem of carbon emission, we have to drive private cars less frequently, buy fewer imported goods, use less air conditioning etc. This sacrifice is the opportunity cost. If we value imported goods, then not buying them is the opportunity cost for alleviating the problem of carbon emission.
Reference:


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張瑞剛 (2012): 《抗暖化,我也可以氣候變遷與永續發展》，台北:實踐大學數位出版。


Station 4: Class discussion “Plan for a Third Airport Runway”

Background:
The Hong Kong International Airport (HKIA) is one of the best and busiest airports in the world. In order to deal with future demand, the Hong Kong Airport Authority has drafted the HKIA Master Plan 2030 offering two options for citizens to discuss and give opinions on. Based on this background, two discussion sessions are designed for students to familiarize themselves with different frameworks of analysis.

Aim:
To learn about analysing frameworks and methods, such as the stakeholders’ analysis method and cost consideration.

Process:
Session 1: Stakeholders’ opinions

| 10 minutes | Explain the background and basic content of the two plans using PowerPoint (3). Distribute worksheet (1) and ask students to read the content. |
| 20 minutes | Introduce stakeholders’ analysis method with PowerPoint (3) and separate students to split into 6 groups (6–8 students in each group); each group should analyse the opinions of at least one stakeholder and discuss the questions on Worksheet (1). |
| 10 minutes | Invite 3 groups which represent different stakeholders to share their views and to draw a brief conclusion. |

Session 2: Multiple-angle assessment and cost consideration

| 5 minutes | Distribute Worksheet (2) and ask students to read the content. |
| 25 minutes | Explain the concept of sustainable development and willingness to pay using PowerPoint (3), then invite students to discuss and analyse the concepts based on Worksheet (2). |
| 10 minutes | Invite 3 groups which represent different stakeholders to share their views and to come to a conclusion. Distribute revision worksheet to students. |
The Hong Kong Airport Authority has proposed two plans for public discussion and opinion: 1) A new two-runway system and 2) A three-runway system.

**Plan 1: Two-runway system**
Expansion would take place by keeping the present two-runway structure of the airport while at the same time increasing volume to a maximum of 74 million passengers, 6 million tons of cargo and 420,000 flight movements. The estimated cost calculated in 2010 for the expansion work was 234 billion HKD. Facilities to be expanded include the passenger terminal, apron and passenger concourse, automated people mover system, baggage handling system, as well as the road network and landside transportation facilities.

**Plan 2: Three-runway system**
By constructing a third runway, it is estimated that in 2030 the passenger volume would be 97 million, with 8.9 million tons of cargo and 602 thousand flight movements. The cost for this would be 862 billion at 2010 prices.

*Source of picture: Airport Authority Hong Kong*
Our future and sustainable development

Class discussion "Plan for a Third Airport Runway"

Worksheet (1)

Please read the following passage to understand the opinions of different stakeholders and answer questions 1 and 2.

According to economic estimations, the compound annual growth rate in Hong Kong from 2008 to 2030 will be 3.2 per cent, while the global rate for the same period will be 4 percent. The increase in Hong Kong’s flight rate is closely linked to the increase in the local production rate. Based on the data, we thus believe the passenger rate of the HKIA would continue to rise. The airport’s passenger volume in 2010 was 50.9 million, and it is estimated to rise up to 9 million by 2030. Taking this into account, if we opt for the two-runway system, the airport could only cope with the demand on air traffic until 2020, and would not be able to handle more. If we opt for the three-runway system, in a few years part of the facilities built for the two-runway system would have to be demolished, and the air traffic might drift away to other airports and be difficult to encourage back.

Source:
From the perspective of Hong Kong’s economic body and business interests, the HKIA brings huge economic value to Hong Kong. In 2008, Hong Kong’s aviation industry made an economic contribution of up to 780 billion HKD, which is 4.6 per cent of the total local production value. Hong Kong’s other core industries, including finance, trading and logistics, travel, business support and professional services, also rely on the passenger and goods exchange of the airport. Therefore, the contribution of the airport is enormous and we must maintain its competitiveness.


From the viewpoint of society, any future extension and operation of the airport may directly and indirectly bring about new job opportunities, thus reducing the unemployment rate. The two-runway plan is estimated to directly generate about 101,000 jobs, and the three-runway plan would create 141,000. Although the three-runway plan has the higher cost, with its higher burden becoming a concern, on the whole it seems that it would bring more benefits both economically and socially.

Source: Collections from newspapers
1) Follow the instructions of your teacher, select at least one type of stakeholder and analyse their relevant opinions.

The stakeholder(s) I am going to analyse is/are _________________________________. His/their opinion is as follows:

**Step 1: Background analysis**
- What are the characteristics of the stakeholder?
- What benefits does the stakeholder share in the plan?
- What would affect these benefits?

**Step 2: Stance analysis**
- What stance does the stakeholder hold in this plan?
- What points of view does the stakeholder provide for this stance?
- What are the expectations of the stakeholder?

**Step 3: Argument analysis**
- What reasons, data or arguments has the stakeholder suggested to support the respective stance and point of view?
2) Based on the opinions of each stakeholder, with whom do you tend to agree? Why?
Our future and sustainable development

Class discussion (1): Plan for a third airport runway
Worksheet (2)

Use Worksheet (1) and the following information to evaluate the third-runway plan, and answer questions 1 and 2.

---

Hong Sing Daily

XX/XX/XX

The Airport Authority has today issued the “Hong Kong International Airport Master Plan 2030”. The highlight of this is the suggestion of building a new runway in order to raise capacity. The Airport Authority’s representative said that the third-runway plan could deal with Hong Kong’s demand until 2030 – or even more air traffic demand – and would further stabilise Hong Kong’s prestigious place as a regional and international aviation centre when faced with competition from the four nearby airports. “The Asia-Pacific area has been pushing global and regional economic growth, with an increasing influence, especially from the mainland,” he said. “In the past decade, economic growth has led to a strong development of demand from air traffic. This trend is expected to continue, and Hong Kong would be a beneficiary. The question is how much business opportunity could the HKIA grasp. The capacity of the current two-runway system is expected to become saturated by around 2020, and the airport would not be able to meet the new demands; this would permanently weaken Hong Kong’s status as an international air traffic hub.”

Source:
Collections from newspapers

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Hong Sing Daily

Little White Dolphin: I have just been to the airport to join in the demonstration! Did you go?

Environment Fighter: Of course! Did you see someone pretending to be a dead Chinese White Dolphin?

Little White Dolphin: Sure! This engineering project will have so much impact on the ocean and I hear that the Chinese White Dolphin will lose 650 hectares of its living area!

Environment Fighter: Not only this! What about the fishing industry? The dredging and reclamation would change the water quality and reduce the amount of fish in the sea. Fisherman and fish-sellers alike would be affected.

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As the suggested reclamation area currently supports middle to low production fisheries, the loss of water may affect its operation. The permanent loss to the fisheries is estimated to be 0.08 per cent of the yearly fishery production of Hong Kong (or a loss of 58,700 to 117,400 kg). Regarding compensation to the fisheries affected by the reclamation project and/or the construction project, a compensation system will be set up.

The potential impact on the Chinese White Dolphin is another important topic. The construction period and subsequent operating period of the reclaimed area may adversely affect the dolphins, including a loss of their living area, annoyance to foraging and daily activities etc. We would study how to relieve and compensate the potential affect on the Chinese White Dolphin and try to reduce the impact on its habitat caused by the airport extension plan.

The air quality in the area prone to air pollution around airport is at present in line with the current air quality index; the airport’s operation has not greatly influenced Hong Kong’s air quality in general. However, the government is reviewing Hong Kong’s air quality index; we would therefore further evaluate the construction project’s impact on air quality according to the required legal procedures.

Reference:
1) Try to analyse the potential impact brought by the third-runway plan, taking into account environmental, economic and social factors from the sustainable development concept.

<table>
<thead>
<tr>
<th>Environmental impact</th>
<th>Economic impact</th>
<th>Social impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) List the positive effects of the plan and the price to pay according to these impacts

<table>
<thead>
<tr>
<th>Positive effects</th>
<th>Price to pay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3) Weigh up the positive effects and price to pay, and try to analyse them using the four concepts learnt in this chapter. Do you support the construction of a third airport runway? Why? Do you personally think the price to pay is worth being paid for by the whole of society?
Station 5: Revision worksheet

Complete the following sentences:

1. The total land area of Hong Kong is 1,104 km², of which the area set aside for human habitation is only 263 km²; the rest is rural area. Due to the limitation of land area, ______________________________________________________

2. The local water collecting system can only supply 20–30 per cent of Hong Kong’s total need for fresh water. The remaining demand mainly relies on ______________________________________________________

3. As Hong Kong lacks natural resources, energy generation has long been ______________________________________________________

Short questions:

1. Please explain “sustainable development”.

________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________
2. Please explain the relationship between environmental justice and sustainable development.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. What are the impacts of environmental problems on our quality of life? Explain with examples.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. “Hong Kong people do not show much willingness to pay for the protection of the environment.” To what extent would you agree with this statement?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________