**Field Trip Activities on Lamma Island**

**Set 1**

|  |  |  |
| --- | --- | --- |
| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_( ) | S. \_\_\_\_\_\_\_ | Date: \_\_\_\_\_\_\_\_\_\_\_\_ |

**Stop 1 Yung Shue Wan Main Street**

**Part 1 Rubbish – what’s the solution?**

1. What sustainable method is used to deal with waste in Yung Shue Wan?

1. List three benefits of using the method mentioned in Question 1.

3. Work in groups and walk along the main street. Find out the collection points for recyclable materials. On the map below (Figure 1), mark and label the area where they are for each of the following products with corresponding letters.

1. Paper (b) Plastics (c) Metal s (d) Glass bottles

(e) Rechargeable batteries (f) Clothes (g) Small electrical appliances

**Figure 1**

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Police

Post

Map from Lands Department

1. Evaluate whether the waste separation and recycling scheme is successful:
2. Are all items mentioned in Question 3 collected for recycling? If not,

which item(s) is / are not collected?

1. Are recycling collection points accessible?
2. Are recycling collection points enough for the public? Give evidence to

support your answer.



1. Suggest two ways to improve the scheme so that more people, including visitors use it more often.

**Part 2 Closed loop recycling – what is it?**

Visit ‘Lamma Corner’.

1. Find out what three types of recyclable materials mentioned in Part I Question 3 are used for making the items.

|  |  |
| --- | --- |
| Recyclable materials | Uses (Give at least one example) |
|  |  |
|  |  |
|  |  |

1. Figure 2 shows the closed loop recycling that is practised on Lamma Island.

**Figure 2**



MANUFACTURING

COLLECTING

PURCHASING

The closed loop recycling involves three processes, including

4. How can this closed loop recycling help combat climate change?

1. As a consumer, what roles should you play in the recycling loop to help combat climate change?



1. Do you think that all recyclable materials collected can enter the loop of recycling? Why?

1. (a) If the recyclable materials cannot be used for recycling, where will they go?

Taking into consideration of your answers in (a) and (b), do you think

recycling is a good way to combat climate change? What else can we

do to combat climate change?

1. Do you think all the recyclable materials are recycled locally in Hong Kong? Why?

1. Taking into consideration of your answers in (a) and (b), do you think recycling is a good way to combat climate change? Why? What else can we do to combat climate change?

**Part 3 Eco shopping**

Work in groups and walk along the street.

1. Go to one of the green shops and select two types of packaged food that you think they are environmentally-friendly. Complete the following table based on the information on their labels.

|  |  |  |
| --- | --- | --- |
|  | **Food A** | **Food B** |
| 1. Name of food |  |  |
| 1. Is the food homemade? If not, where is it produced? | 🞏 Yes 🞏 No  If no,  🞏 Hong Kong  🞏 The Mainland  🞏 Other countries | 🞏 Yes 🞏No  If no,  🞏 Hong Kong  🞏 The Mainland  🞏 Other countries |
| 1. Is the food made from organic farms? |  |  |
| 1. Number of ingredients |  |  |
| 1. Do the ingredients come from plants or animals? Give two examples. | 🞏 Plants 🞏 Animals  🞏 Both  Examples:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 🞏 Plants 🞏 Animals  🞏 Both  Examples:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. What is/are the packaging material(s)? | 🞏 plastic bag  🞏 paper  🞏 others \_\_\_\_\_\_\_\_\_\_\_\_\_ | 🞏 plastic bag  🞏 paper  🞏 others: \_\_\_\_\_\_\_\_\_\_\_\_\_ |

2. Which food would you like to buy in order to reduce more carbon emission? Give three reasons to support your answers.

**Stop 2 A Local Farm**

1. Work in groups. Observe the operation of this farm and interview the farmer. Complete the following table.

|  |  |
| --- | --- |
| **Questions** | **Answers** |
| 1. How to improve soil   quality? | 🞏 using chemical fertiliser  🞏 using compost  🞏 covering soil with mulches  🞏 crop rotation  🞏 fallowing  🞏 agroforestry: trees are grown with crops  🞏 others \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| (b) How to avoid pest? | 🞏 using chemical pesticide  🞏 using CD-ROMs  🞏 using plastic balls  🞏 growing different types of crops  🞏 crop rotation  🞏 growing companion crops  🞏 using insect trap  🞏 others \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| (c) How to use water resource? | 🞏 constructing wells  🞏 building water tanks or ponds  🞏 covering soil with organic matter  🞏 using drip irrigation  🞏 others \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. What tools are used for farming? | 🞏 using simple tools, e.g. \_\_\_\_\_\_\_\_\_\_\_  🞏 using machines, e.g. \_\_\_\_\_\_\_\_\_\_\_ |
| (e) What is the useful output? | 🞏 crops, e.g. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  🞏 animal products, e.g. \_\_\_\_\_\_\_\_\_\_\_ |

1. Do you think this way of operation of farm can reduce carbon emissions? Give reasons.

|  |  |  |
| --- | --- | --- |
|  | Can it help to reduce carbon emission? Put ‘🗸’ or ‘🞫’ | If yes, how can this help to reduce carbon emission? |
| 1. Way of improving soil quality |  |  |
| 1. Way of avoiding pest |  |  |
| 1. Way of using water resource |  |  |
| 1. Tools used for farming |  |  |
| 1. Type of output |  |  |



1. Would you like to buy agricultural produce grown in this type of farm for reducing climate change? Give reasons to support your answers.

**Stop 3 Viewing at Lamma Power Station**

1. Write the letters in the space provided to show the components of power station in Figure 3.

**Components of Power Station:**

|  |  |  |
| --- | --- | --- |
| 1. Coal-fired Generating Units | 1. Gas-fired Combined-cycle Generating Units | 1. Oil-fired Generating Units |
| 1. Coal Yard | 1. Ash Lagoon | 1. Transport jetty |

**Figure 3 Components of Power Station**



4.

6.

Lamma Power Station Extension

2.

5.

3.

1.

Aerial Photos from Lands Department

1. Describe and explain the locational advantages of the power station.

|  |  |
| --- | --- |
| **Locational characteristics** | **Reasons** |
| Is it located near the coast? |  |
| Is it sheltered by hills? |  |
| Is it near the residential areas? |  |

1. Table 4 shows the capacity of the Lamma Power Station.

**Table 4 Capacity of the Lamma Power Station in 2013**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Number of units** | **Capacity of each unit (MW)** | **Total capacity (MW)** |
| Coal-fired Generating units | 3 | 250 | 750 |
| 5 | 350 | 1750 |
| Oil-fired Generating Units | 4 | 125 | 500 |
| 1 | 55 | 55 |
| Gas-fired Combined-cycle Generating Units | 1 | 335 | 335 |
| 1 | 345 | 345 |
| Solar Power System |  |  | 1 |
| Lamma Winds |  |  | 0.8 |
| **Total** | | | **3736.8** |

Source: HK Electric

<https://www.hkelectric.com/en/MediaResources/Documents/LPS_2014.pdf>

1. What energy source (Hint: a type of fuels) is mainly used in the electricity generation? What do they include? Are they renewable?

1. (b) Among these fuels, which one is mainly used to generate electricity in
2. the power station? Which one has been increasingly used to generate
3. electricity recently? (Hint: Think about what kind of generating unit
4. has been built in the newly-reclaimed area)
5. (b) Among these fuels, which one is mainly used to generate electricity in
6. the power station? Which one has been increasingly used to generate
7. electricity recently? (Hint: Think about what kind of generating unit
8. has been built in the newly-reclaimed area)
9. Among these fuels, which one is mainly used to generate electricity in
10. the power station? Which one has been increasingly used to generate
11. electricity recently? (Hint: Think about what kind of generating unit
12. has been built in the newly-reclaimed area)

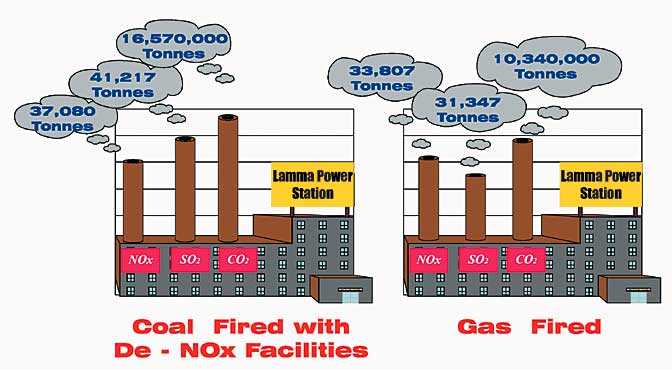
(b) Among the fuels mentioned in (a), which one is mainly used to generate electricity in the power station?

(c) What kind of fuels has been increasingly used to generate electricity recently? (Hint: Think about what kind of generating unit has been built in the newly-reclaimed area?)

4. Observe the power station. Does the power station cause air pollution? If yes, what kinds of air pollutants are released?

5. Figure 5 shows the amount of air pollutants emitted from coal-fired and gas-fired generating units respectively when the total electricity generation in the year 2012 would increase by 2.57 times compared with that in 1990.

**Figure 5 Amount of Air Pollutants Emitted from the Coal-fired and Gas-fired Units**



Source: Environmental Protection Department, HKSAR Government

<http://www.epd.gov.hk/eia/operation/english/chapter05_4.html>

1. Why does the power station cause climate change?

1. More generating units will be built to generate more electricity in future. Explain why.

1. Which kind of fossil fuels, coal or natural gas, should be more widely-used in the new generating units? Explain why.



1. Do you think that using a mixture of different types of fossil fuels only can help to minimise climate change in future? Why?

**Stop 4 Lamma Winds**

Is the use of renewable energy a way out in Hong Kong?

1. What types of renewable energy are used at this site?

1. Why is it suitable to set up the wind turbine at this site? Give five reasons.

Is it easy to find similar site to build wind farm in Hong Kong? Why?

1. Collect the data at the tower base of the wind turbine and complete the following table.

|  |  |  |
| --- | --- | --- |
| Date & time | 12 Jan 2017 at  10:34 p.m. |  |
| Present wind speed | 5.9 m/s | m/s |
| Present power output | 198.1 kW | kW |
| Cumulative electricity generated | 9442719 kWh | MWh |
| Amount of carbon dioxide (CO2) saved | 7868932 kg | tonnes |

Remarks: The units of cumulative electricity generated and amount of carbon dioxide saved shown on HK Electric’s website are different from those shown at the tower base of the wind turbine.

What is the relationship between wind speed and power output?

1. In 2013, the electricity consumption was 44.21 billion kWh in Hong Kong. Do you think that this wind turbine generates a lot of electricity? Give evidence to support your answer.

Explain why this wind turbine cannot be designed to produce a lot of electricity.

1. By observation, list the environmental problem(s) caused by the wind turbine.



1. Should different types of renewable energy, particularly solar energy and wind energy, be further developed in Hong Kong?

Each group will be assigned one of the following roles. Collect the information from the exhibition panels for discussion.

|  |  |
| --- | --- |
| **Role** | **Tasks** |
| Government | Discuss why different types of renewable energy should be further developed in relation to existing environmental problems |
| Spokesman from a power company | Discuss whether the development of different types of renewable energy is cost-effective |
| Environmentalist | Discuss the negative impact of the development of different types of renewable energy on the environment |
| Urban planner | Discuss the problems in the selection of suitable sites for the development of different types of renewable energy |
| Spokesman from Department of Energy | Discuss whether different types of renewable energy can give abundant and reliable energy supply in Hong Kong and their energy efficiency |

Your role:

Your opinion:

1. Do you agree that the renewable energy should be further developed in Hong Kong as a sustainable measure against global warming? Why?

Strongly disagree Disagree Agree Strongly agree

|  |  |  |
| --- | --- | --- |
|  |  |  |

Give at least three reasons:

1. The use of technical measures, like fuel mix and renewable energy, seems not to be the most sustainable way to combat climate change caused by power station. Then what else can we do to solve this problem?

**Stop 5 Hung Shing Yeh Beach Tree Planting Site**

1. Read the information from an interpretive plate. What are the two types of trees? Give one example of each type of trees.

|  |  |
| --- | --- |
| Type | Example |
|  |  |
|  |  |

1. Which type of trees is chosen for plantation at this site? Why?

1. How can the planting of trees help reduce climate change?

1. Apart from planting of trees, what else can we do to help reduce climate change at this site? Suggest at least two methods.

**Stop 6 The Home Farm**

At Lo So Shing Village, observe the activity held outside the village houses

1. What activity is carried out outside the village houses?
2. Can you find a large piece of farmland?
3. What agricultural produce is grown from the farm?

1. Do you think that the produce is for self-consumption only? Give reason to support your answer.

1. How can the growing of our own food help reduce carbon emission in Hong Kong?

1. Could you grow your own food at home? Why or why not?



1. What else can we do for food supply to reduce climate change?

**Stop 7 Mudflat**

1. What are the characteristics of mudflat?
2. What is its relief?
3. What is made up of the mudflat?
4. Does the depth of water vary from time to time?
5. What kinds of living organisms live in the mudflat?

|  |  |
| --- | --- |
|  | Examples |
| Plants |  |
| Wetland Animals |  |

1. What does Mudflat provide for these living organisms?

1. Do all the animals live in the water all the time?
2. How will climate change affect the water level in the mudflat?

1. How will the change in the water level affect the living organisms?



1. What should you do to protect these living organisms in our daily life?