

Teaching Materials (Lesson Note)

TLS3008 Powerful Five

S3 Liberal Studies

Introduction to solar energy (Student Note)

Name: _____ Class: _____ Date: _____

1. Recap:

The use of energy is one of the essential parts of our life. In modern society, we could not live without energy.



Can you name some types of energy that we are using?

Do you still remember the definition of renewable and non-renewable energy?

- Renewable energy: _____

- Non-renewable energy: _____

2. Solar Energy

- Solar Energy is a typical example of _____ energy. It is widely applied in many countries such as Australia, India, Spain.

Mandala Thinking

	Solar Energy in Hong Kong	

(i). Advantage of solar energy:

- Renewable
- Low marginal cost of generation
- Geographically widely available
- No noise pollution

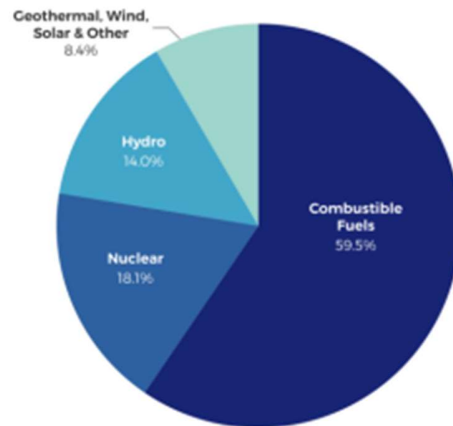
(ii). Disadvantage of solar energy:

- High installation cost
- An intermittent energy source
- Requires a broad space for solar panel installation
- Emission of greenhouse gases during manufacture processes

(iii). Application of solar energy in Hong Kong

→ Do you think the use of solar energy is popular in Hong Kong?

Shares of generation by source in the OECD for 2016



What is the proportion of solar energy in the total fuel mix in Hong Kong?

Why it is not popular in Hong Kong?

→ **Current Policy promoting the use of Solar Energy:**

- Floating solar panels in reservoir

In order to explore the potential of **installing solar panels on reservoirs**, the WSD (水務署) started off by implementing two small-scale pilot projects at Shek Pik Reservoir and Plover Cove Reservoir, each of which will be designed for a generation capacity of 100kW. Each of the system can generate as much as 120,000 units (kilowatt-hours) of electricity annually. The amount of electricity generated is equivalent to the annual electricity consumption of 36 average households with a reduction of 84 tonnes of CO₂ emission.

Apart from harvesting renewable energy from the sun, there are additional benefits of installing such systems over the reservoir surface, which include **reducing water evaporation, suppressing algae growth, saving precious land resources and yielding a higher solar panel power generation efficiency.**



Solar panels installed on the water surface of a reservoir

- Feed-In Tariff(上網電價)

Description: A policy mechanism designed to accelerate investment in renewable energy technologies. It achieves this by offering long-term contracts to renewable energy producers, typically based on the cost of generation of each technology. There would be a scheme for the producers of renewable energy to sell the electricity generated to the power supplier, in order to obtain a discount in the monthly electricity bill.

According to the law, residents of the village houses in New Territories are allowed to **install solar panels on the rooftop** of their house, with the height less than 2.5 meters. By late 2019, **4600 applications** was recorded by the two major energy suppliers in Hong Kong.



Solar panels installed on the rooftop of a village house in New Territories

3. Class Activity: Mini Debate

Topic: Should solar energy be widely used in Hong Kong?

Stakeholders: Government, normal citizens, power suppliers, entrepreneurs

Rules of the debate:

1. Each group would be assigned with one stakeholder.
2. Participants are required to have three rounds (2 mins for each round) of debate between groups, including introduction, rebuttals, and grand crossfire.
3. After a group of classmates expressed their opinions, the other group of students should comment on those ideas first, then share their stance.
4. Students have a total of 12 minutes to speak.
5. Other groupmates need to jot down the arguments suggested by adjacent parties into the working paper and provide the information for the inquiry from the next round of students.

Reminder:

- You have 8 minutes to discuss your points, supporting evidence and rebuttals with your groupmates.

- After your discussion, please post your arguments onto the **Padlet website** given by the teacher in the Powerpoint.

4. Post Debate Reflection:

Discuss the following two questions with your groupmates:

Question 1: Do you agree that solar energy should be widely used in Hong Kong?

Options: a) Agree b) Disagree

Question 2: Which stakeholder(s) give the most convincing point or view?

Options: a) Government b) Normal citizens c) Power suppliers d) Entrepreneurs

Question 3: Give a word to describe solar energy in Hong Kong.

- Go to the **Mentimeter website** and share your view with your classmates!