Supplementary Notes on the
Climate Change PowerPoint for Primary Schools

Slide 1

Climate change has become a hot topic for discussion among members of the public in recent years. This PowerPoint presentation is intended to introduce to students the basic knowledge of climate change; its impact and what actions we as individuals may take to mitigate climate change.

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There is a close relationship between the carbon dioxide in air and climate change. Air contains carbon dioxide. When we breathe, we take in oxygen and give out carbon dioxide.

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The photosynthesis process of plants does just the opposite of our breathing. Green plants carry out photosynthesis under the sun, taking in carbon dioxide and giving out oxygen, hence green plants help to reduce the amount of carbon dioxide in air.

Slide 4

Like breathing, burning such as cooking or having barbeque gives off carbon dioxide. We may not be aware that the process of generating electricity will also produce a large amount of carbon dioxide. At present, most electric power plants depend on burning fossil fuel such as coal, petroleum or natural gas to generate electricity.

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Why carbon dioxide can bring about changes in the climate of the earth? The heat content of the earth surface is mainly from the sun. When sun light shines on the surface of the earth, the earth will heat up.

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After receiving the heat, the earth will radiate the heat back to space. As a matter of fact, the amount of heat received from the sun and the amount of heat the earth radiated out to space is more or less the same in the long run. Nature is in equilibrium.

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The carbon dioxide in air can hinder the heat to radiate back to space. As such, carbon dioxide acts like a blanket, hinders the earth from losing heat.

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If the amount of carbon dioxide in air increases, the capability of the earth to shed the excess heat will reduce. In response, the temperature of the earth will rise, resulting to what is known as global warming.

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In our daily life, quite a lot of our activities, i.e. using electrical appliances, will have an impact on the air temperature indirectly. We need electricity to drive our electrical appliances. To meet our need, the electrical power companies burn coal, petroleum or natural gas to generate electricity, in doing so, put carbon dioxide into the air. The amount of carbon dioxide in the air increases, so as the air temperatures.

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The material for making paper and wooden furniture comes from trees. The use of paper and wooden furniture requires chopping down of a large amount of trees. Reducing the number of trees to absorb carbon dioxide, the temperature of the whole earth will rise.

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Global warming will lead to sea level rise. Two reasons could be identified, i.e. (i) thermal expansion of sea water and (ii) melting of ice/snow on land and the water produced flows into the sea.

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As shown in the experiment in the figure, when water temperature increases, the volume of water will increase due to thermal expansion. Since water cannot move sideway inside the container, the water level will rise. When sea water heats up, the sea level will rise in the same way.

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Global warming will cause the glaciers on high mountains and on land in the polar regions to melt. This will make it increasingly difficult for animals like polar bears, seals, sea lions and penguins to find suitable habitats. As for us, we would find scenic skiing and touring sites disappearing.

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As shown in the experiment in the figure, when ice melts, it will turn into water. When more ice cubes in the funnel melt, more melted water will flow into the flask and the water level in the flask will rise. With the same principle, when glaciers melt and turn into water, the water will

flow into the sea and the sea level will rise.

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A rise in sea level may submerge some small island states which are established on coral atoll reefs. It will also cause flooding of the low-lying coastal region. Moreover, as illustrated in the figure, if there is a rise in sea level, it will make it easier for the coastal regions to be flooded during typhoon attacks or rainstorm events.

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Weather becomes hotter and hotter with global warming. Outdoor activities could become a hardship.

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Global warming will make the weather unstable. There will be more rainstorm events. Heavy rain may bring landslides which pose a threat to hiking activities.

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Mosquitoes thrive better in a hotter environment. In Hong Kong, more mosquitoes can be found in summer than in winter. With a rise in temperature, the number of mosquitoes will rise too. This will make it easier for mosquito-related infectious diseases such as dengue fever to develop.

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Many students may have a wrong concept, thinking that air-conditioning is the solution to global warming. All we need is to turn the air temperature down, we will not be affected. It is true that doing this can lower the temperature inside a room. However, it would increase the demand for electricity, and in turn more coal, petroleum and natural gas will be burnt to generate the electricity needed, more carbon dioxide will be emitted to the air which will make the temperature of the earth to increase further. It is a vicious cycle.

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Climate change is of great concern to us. What can we do to stop the earth in having fever? We can save electricity, say by keeping the window open in summer as far as possible, hence reduce the use of air-conditioning. If air-conditioning is used, avoid setting the temperature too low; turn off electrical appliances when not in use; use energy efficient (i.e. can save electricity) electrical appliances, etc.

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Apart from saving electricity, students can actively participate in tree planting activities. Protect the trees and prevent hill fire. Besides, since paper is made of wood from trees, it makes sense to save paper.

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Reduce consumption is also a viable measure. Since the production processes of all commercial goods required the use of a large amount of energy, hence producing carbon dioxide. (At this point, students may be encouraged to give examples of other viable mitigation measures).

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“Save the earth, count me in!” The earth is our home. We should stand up and take action right now. Let us save the earth and slow down climate change.