

# CGC1P Unit 2: Natural Resources and Sustainability

## Activity 2: Sustainable City

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### Overview

A sustainable city is a community that uses natural resources at a slower rate than the resources can replace themselves. This is important to lower the city's ecological footprint so it can function successfully into the future.

### Lesson

#### *A Sustainable City*

A sustainable city is a community that uses natural resources at a slower rate than the resources can replace themselves. This is important to lower the city's ecological footprint so it can function successfully into the future.

Read the criteria below for a sustainable community.

#### *Wind Farm & Wave Generators*

Renewable energy would be gathered by way of wind farms and wave generators. This energy could support, and eventually replace, fossil fuel energy. For human development to continue, we will ultimately need to find sources of renewable and sustainable energy. Wind and water energy has been used for centuries to power sailboats, grind flour, and pump water. Today wind and wave power are used to generate electricity. In the future, wind and wave energy could be two of the most cost-effective and sustainable sources of electrical power.

#### *Solar Energy*

Solar energy would be collected by solar panels placed on homes and other buildings throughout the city. Solar power is energy from the sun. Solar power is also renewable! Solar energy can be used by our homes to large satellites in space.

#### *Clean and Treat Wastes*

Low-pollution industries carefully clean and treat wastes, minimizing the impact of industry on the environment (e.g., "smokestack scrubbers").

#### *Sustainable Solutions*

Recycling of waste materials such as glass, metal, and paper would take place in specially designed processing plants.

### ***Biomass - Energy from Organic Products***

The burning of organic wastes such as wood chips, sugar cane, manure, and other organic material can produce heat that can be transferred to produce electricity.

### ***Public Transportation***

Public transportation, powered by renewable energy sources, would be the dominant form of transit (e.g., Hydrogen Fuel Cell powered vehicles).

### ***Greenery in the City***

Greenery in the city, planted in parks and other open spaces, would help clean air and provide wildlife habitats. Greenery in the city is valuable not only because it looks beautiful but also because it allows people to enjoy the outdoors, creates habitats for animals and plants, and prevents ecologically sensitive areas from being lost forever.

### ***Water Supply***

The water supply would take advantage of non-polluted river water, which would need no chlorination and little other treatment. This water would be used in homes and industry for purposes other than drinking.

### ***Organic Waste***

Organic waste from the city sewage system would be transported to surrounding farms and used as fertilizer.

## **Assignment**

Visit [www.darvill.clara.net/altenerg](http://www.darvill.clara.net/altenerg) to answer the following questions on energy resources:

1. Name 2 fossil fuels.
2. Describe how a coal-fired power station works.
3. Name two advantages of generating electricity using nuclear power.
4. What are the 3 main ways of using energy from sunlight?
5. Describe three disadvantages of wind power.
6. What is a Tidal Barrage? Describe where one could be built. Name one advantage and one disadvantage of this method of generating power.
7. What is geothermal energy? How does it work?
8. What is biomass energy? What are some advantages and disadvantages of this kind of energy?