

Learning Activity

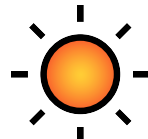
Name: _____

Group: _____

Date: _____

Geography Secondary 1 and 2

Which Energy Source Would You Choose?



Student Booklet – B

Read the scenario and fill in the table in your student booklet below. You will need to identify the characteristics, advantages, and disadvantages of each energy source.

Scenario – The City of Sivetia

The city of Sivetia is located at the foot of a mountain range crossed by hundreds of streams and rivers. The city's population is growing rapidly, and new schools, hospitals, and industries are being developed. As a result, the existing hydroelectric plants can no longer meet the city's energy needs.

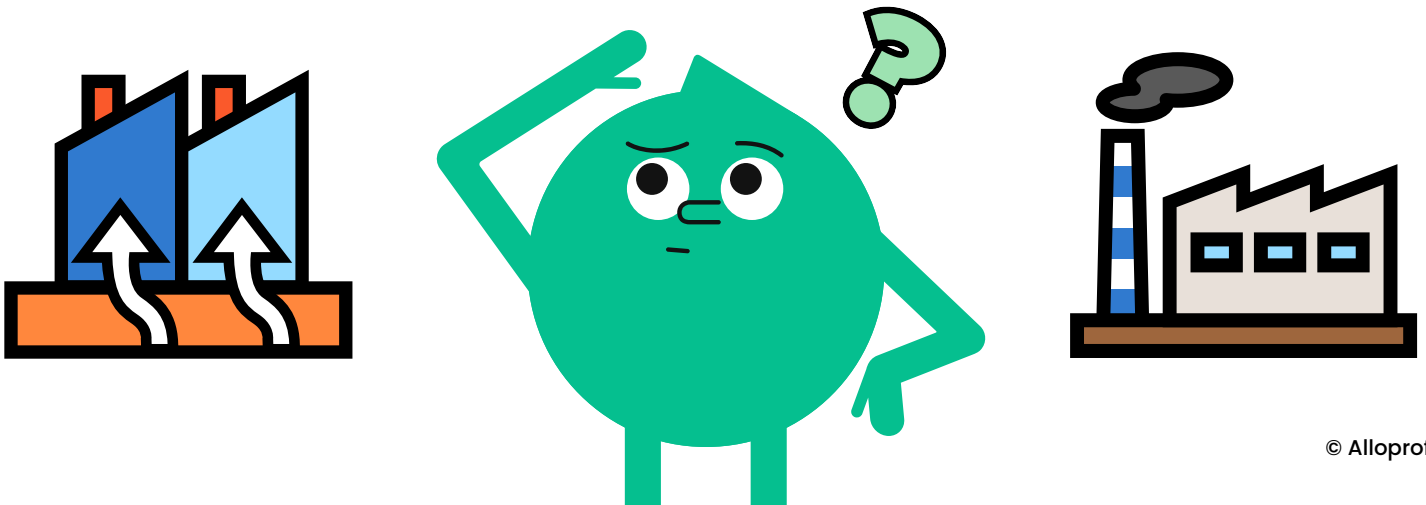
Unfortunately, there are no more rivers with a flow large enough to add additional hydroelectric plants. The city must therefore find a new source of energy.

Sivetia has an important natural resource: less than three kilometres below the surface, there is a very hot groundwater reservoir recently identified by geologists. It releases enough heat to supply a geothermal power plant that could be used to generate electricity. Because the reservoir is relatively close to the surface, construction costs would be lower.

The city is also located near a major oil sands deposit. Many see this as a golden opportunity to meet the region's growing energy demand and to enrich the population. Exploiting these oil sands would provide the fuel needed to operate a thermal power plant. Any surplus production could be sold. However, many questions are raised regarding the environmental impacts of such development.

Both energy sources are located near the city, making them practical for supplying energy to the population.

The city council is debating whether to invest in a geothermal power plant or to focus on developing the oil sands and building a thermal power plant?



City of Sivetia

Important Information

The city's needs: Energy demand is _____ than current production

Energy sources: Strong _____ and substantial _____ reserves

Constraints faced by the city: Hydroelectric potential is already _____

Energy Source 1	Energy Source 2
☒ Renewable _____ ☐ Non-renewable	☐ Renewable ☒ Non-renewable _____
Required Infrastructure	Required Infrastructure
• A _____ power plant (using geothermal energy) • Transportation infrastructure (_____, etc.)	• Oil extraction and _____ infrastructure • _____ infrastructure (train, pipeline, or truck, as well as power lines) • A thermal power plant (using _____)
Advantages	Advantages
• Renewable energy source • Site with strong _____ • Low _____ • _____ provides electricity year-round, regardless of weather conditions	• Job creation • Fuel relatively easy to extract and transport • Possibility of selling petroleum products, contributing to the _____ • The thermal power plant provides electricity year-round, regardless of weather conditions
Disadvantages	Disadvantages
• _____ installation costs	• _____, _____, and _____ pollution • Emits a large amount of _____ • _____ degradation and possible _____ impacts on the population • Non-renewable energy source

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.