



7. WATER, WATER, EVERYWHERE



Activity overview

This activity examines the close relationship between Canada's water resources and the production and transmission of energy. Students will explore Canada's main watersheds and the interrelationship between water and the extraction, production and transmission of energy resources.

Grade level

▷ 4–12

Time required

▷ 45–60 minutes

Materials

- ▷ Coloured pylons (4 colours)
- ▷ Coloured chains (4 colours)
- ▷ Watershed maps (4)
- ▷ Arrow cards (30)
- ▷ Water energy information card (4)

Set-up

Place coloured chains, pylons and arrow cards on the border of the map. Familiarize yourself with Canada's watersheds by visiting the interactive map at canadiangeographic.ca/watersheds.

Introduction

After students have had a chance to explore the map on their own, ask them to stand somewhere on Canada. Ask anyone standing on water to sit down. For those not standing on water, ask them to measure the distance between them and the closest body of water. Can any patterns be noticed? (Note that no matter where you are in Canada, there is water nearby.) As a class, locate and name the three oceans near Canada, the five Great Lakes, big rivers and any other large bodies of water found in Canada. Discuss the different types of water that Canada has, as well as the role that fresh water plays in Canada. Explain that Canada has about 20 per cent of the world's freshwater resources. Have the students brainstorm ideas as to why Canada's large amount of fresh water might be significant. Next, discuss how Canadians use water in their daily lives and how Canada's geography might affect water usage. Explain that water also plays an important role in the production and transmission of energy in Canada.

Development

Divide your class into four groups, each representing a main watershed in Canada (Arctic Ocean, Pacific Ocean, Hudson Bay and Atlantic Ocean). Give each group a watershed map, and direct them to outline their watershed on the Giant Floor Map using a coloured chain. Have students read the information aloud and locate the main river within their watershed using another chain or pylon. Then ask them to look at the physical landscape of their watershed and use an arrow card to guess which way the water flows. Explain that all water in a watershed flows in the same direction and is influenced by surrounding mountains, hills and valleys.

Point out the small part of southern Saskatchewan that is not included in the four outlined watersheds. Explain that there is one more major watershed — the Gulf of Mexico watershed — that covers this area. This is a very large watershed that drains into the Gulf of Mexico, over 2,750 kilometres farther south; the Mississippi River is its primary route.

Leaving the watershed outlines on the giant map, give each group of students a water energy information card. Instruct each group to use the coloured pylons to locate their energy resource on the map and discuss the spatial significance (the physical and human features of its location). When they are finished, invite each group to present their information to the class, defining their energy resource, explaining how water is used and describing the places they have highlighted on the map. Discuss any patterns that may be seen. Ask your students if they can think of any ways that less water could be used during any of the energy production processes.





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Conclusion

Explain that water is also used indirectly for energy transmission to ship energy across Canada and around the world. Ask students which types of energy can be transported over water (crude oil and natural gas liquids can be shipped). Have students stand on the purple dotted lines. What do these lines represent? Explain that the oil used in eastern Canada is imported from other countries by ship. Additionally, diesel is shipped to Canada's territories through northern ports. What could be the spatial significance of these ports? The ships used to transport oil are called oil tankers and can carry up to 500 tonnes of oil in one shipment — about the weight of 115 elephants. Ask students about the benefits and drawbacks of shipping energy resources over water. Can they come up with alternative ways of transporting the needed energy?

Finally, highlight Canada's offshore oil platforms on the East Coast. Describe how large deposits of oil and natural gas deposits are found deep below the ocean floor, and that massive offshore oil platforms drill deep to extract these resources. Canada has four major offshore projects: Hibernia, Terra Nova, White Rose and Hebron. What might be the spatial significance of these oil platforms (why is the oil there, why are they drilling in deeper water, etc.)?

Extend your geographic thinking

Conclude your lesson by connecting how Canadians use water directly and indirectly every day. When we take a shower, we use water directly, but when we turn on our lights and drive a car, we use water indirectly.

Links to the Canadian National Standards for Geography

Essential Element 1: The World in Spatial Terms

- ▷ Location of major human and physical features on Earth
- ▷ Map, globe and atlas use (e.g., observing and analyzing relationships)

Essential Element 2: Places and Regions

- ▷ Physical and human characteristics of places and regions in Canada and the world

Essential Element 5: Environment and Society

- ▷ Renewable (land, forests, water) and non-renewable (minerals, fossil fuels) resources
- ▷ Environmental issues (e.g., water supply, air quality, solid waste)
- ▷ Watershed management
- ▷ Use and sustainability of resources