Powering an Island

How resources and technology shape Iceland's economy

WG.C.6.1 "Examine the significance of access to natural resources, energy, and technological innovations (e.g., wind, solar, nuclear) to the economic development of a region."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two natural energy sources, circle two technologies that make energy usable, and number three ways energy access affects Iceland's economy.

Iceland's Energy Choices

1. On a cold morning in Iceland, many homes are warm without burning imported oil or gas. The island sits above active volcanic zones, where heat from underground warms water. Wells bring hot water to towns, and insulated pipes deliver it to buildings. This system, called district heating, reduces the need to import fuel for space heating. Money that households and businesses might have spent on fuel can instead support other purchases and investments. Building wells and pipes costs money, however, and geothermal heat is not equally accessible in every part of the island.

2. Iceland's steep rivers also offer a source of electricity. Dams capture river water and send it through turbines, while geothermal power plants use underground heat to generate electricity. These power sources make electricity available without relying heavily on imported fossil fuels. Aluminum producers use large amounts of electricity to turn imported alumina into metal. Access to this power has helped Iceland attract aluminum smelters, creating jobs and exports even though the raw material comes from abroad. The result shows that a region does not need to possess every input locally to build an industry, but it does need dependable energy and ways to move materials.

3. Energy access alone does not guarantee growth. Engineers must build and maintain power plants, transmission lines, and ports so energy and imported materials can reach factories. These projects require major investment. Hydropower dams can change river habitats, and geothermal fields must be managed so heat and water are not withdrawn faster than they can be renewed. Communities must weigh industrial jobs and export income against environmental effects and construction costs. Iceland's choices also show why technology matters: wells, turbines, and power lines turn natural resources into usable energy, while decisions about where to build determine who benefits.

2 ANSWER WITH EVIDENCE

Use the passage

1. How can geothermal district heating affect spending by Icelandic households and businesses?

2. Why can Iceland produce and export aluminum even though it imports alumina?

3. Why are power lines and ports important to the economic value of Iceland's energy resources?

4. What is one benefit and one cost or risk Iceland must weigh when expanding energy production for industry?

3 YOUR TURN

Your own words

Imagine a sunny inland region with little water, high daytime electricity demand, and no local fossil fuels. In four to five sentences, propose an energy investment, explain how it could support an industry or jobs, and identify one cost or limit leaders must consider.

ANSWER KEY

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HIGH SCHOOL · WG.C.6.1

PART 1 · READ AND MARK

Underline two natural energy sources, circle two technologies that make energy usable, and number three ways energy access affects Iceland's economy. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How can geothermal district heating affect spending by Icelandic households and businesses?	**It reduces their need to buy imported heating fuel, leaving money for other purchases and investments.**
2	Why can Iceland produce and export aluminum even though it imports alumina?	**Its hydropower and geothermal plants provide the large amount of electricity needed to turn imported alumina into aluminum.**
3	Why are power lines and ports important to the economic value of Iceland's energy resources?	**Power lines move electricity to factories, and ports allow imported materials to reach them and finished goods to be exported.**
4	What is one benefit and one cost or risk Iceland must weigh when expanding energy production for industry?	**Expanding energy production can support industrial jobs and exports, but it can require major investment or harm river habitats.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The region could install solar panels to capture its abundant sunlight. Local workshops could use the electricity during the day to assemble electronics, creating jobs and reducing fuel imports. Solar power would fall after sunset, so leaders might also invest in batteries. Battery costs could limit how quickly the plan expands.

Accept other passage-supported economic effects and tradeoffs in the short answers. For Part 3, look for a plausible link between the region's conditions, an energy technology, economic activity, and a cost or limit.