



LEARNING INQUIRIES

# OILSANDS EXTRACTION

TIME: 2-4 CLASS PERIODS

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## OVERVIEW/FOCUS QUESTION

Compare and contrast two different methods of bitumen extraction that contribute to Canada's oil supply in order to answer the following question:

Considering various factors (e.g., environmental, economic), if Alberta was to move to only one method of extraction should it be surface mining or SAGD?

### SUBJECT/TOPIC

**MANAGING CANADA'S RESOURCES AND INDUSTRIES**

### GRADE LEVEL

**CGC2D (GR. 9 GEOGRAPHY) ONTARIO CURRICULUM)**

## LEARNING GOALS

1. Formulate different types of questions to guide investigations into issues in Canadian geography.
2. Analyse the influence of governments, advocacy groups, and industries on the sustainable development and use of selected Canadian resources.
3. Explain how the availability and spatial distribution of key natural resources, including water, in Canada are related to the physical geography of the country, and assess the significance of their availability and distribution, nationally and globally.
4. Analyse the main factors (e.g., availability of resources, distance to market, transportation costs, government incentives, labour force) that need to be considered when determining the location of sites for different types of industries.

## MATERIALS NEEDED

- Role playing card (provided)
- Access to the internet for research
- Access to the Energy IQ website
- Giant Floor Map (or tiled map or Google Maps)

## CONNECTION TO THE CANADIAN GEOGRAPHY FRAMEWORK

### CONCEPTS OF GEOGRAPHIC THINKING

Spatial Significance:

- Understand the location of oilsands extraction, and analyze where each type of mining can occur in the oilsands. Identify the environmental, economic, political and/or social context of the issues of oilsands extraction.
- Determine the potential stakeholders and their points of view that should be considered in the analysis of oilsands extraction.
- Analyse the multiple points of view of oilsands extraction considering environmental, economic, political and/or social lenses.

### INQUIRY PROCESS

Inquiry is guided with a pre-selected inquiry question. Students will interpret, analyse, and evaluate the perspectives and methods of oilsands extraction. They will draw a conclusion about the most appropriate method and communicate their findings and understanding.

### GEOSPATIAL SKILLS

Using either the Energy Production and Transmission Giant Floor Map, or the printed tiled map version, or Google Maps, determine the location of the oilsands and the location of where surface mining and SAGD occur.

## LESSON DESCRIPTION

### MINDS ON

Students will be introduced to oilsands extraction in Canada by exploring videos and graphics. Students will be presented with a scenario and an inquiry question they will need to answer from a stakeholder perspective.

### ACTION

Students will participate in a mock town hall, presenting their stakeholder perspective to the class.

### CONCLUSION

The class will eventually come to a conclusion to answer the question. They will write a summary of their rationale.

## LESSON IMPLEMENTATION

### MINDS ON

Canada's oilsands are an important part of the country's economy, not only contributing to our GDP but providing jobs and livelihood for a large number of Canadians. However, the oilsands are a controversial form of energy resource extraction due to their environmental impact. With growing populations and standards of living, energy demand is increasing, therefore oilsands extraction will continue on in the near future. With innovations in extraction methods, as well as reclamation and environmental monitoring, let's try and determine which extraction process would be more environmentally friendly for Canada's future.

Explore Alberta's Energy Story on the EnergyIQ website. Download the factbook and have students read the oilsands infographics: [https://energyiq.canadiangeographic.ca/learning\\_centre/factbooks](https://energyiq.canadiangeographic.ca/learning_centre/factbooks).

Watch the following videos:

- Overview of oilsands extraction - <https://www.youtube.com/watch?v=cxiA40XHF0I>
- SAGD - <https://www.youtube.com/watch?v=CjZlgGKolek>

Using the Giant Floor Map, tiled map, or Google Maps, delineate where the oilsands are and where the two different methods are most prominent.

Take a poll of the class asking them into which method they think would be best to invest more research and money (as they complete this activity, their opinions may change).

## **ACTION**

**Present the class with the following hypothetical scenario:**

[Climate change](#) has become a major issue in Canada and around the world. Often, fossil fuels, and in particular the oil industry, are blamed. Given that our [energy consumption is increasing](#), Canada needs to look at sources of energy extraction that can balance economic benefits with a smaller environmental impact. In an attempt at curbing the effects of climate change, the government has taken a bold move and has decided that we can only use one method of oil extraction. Should Canada move to only surface mining or SAGD?

Hand out stakeholder cards and have students either work alone or in pairs/groups.

Stakeholders are: Oil Company, Government, Indigenous Community, Environmentalist, Non-Indigenous Community Member. They will chose to support either SAGD or surface mining.

With the class, try to come up with factors that each stakeholder would need to consider for each extraction method. Some ideas include: production amounts (economic), environmental footprint, emission outputs, location (depth in ground), the amount of land used, employment opportunities, etc.

Create a criteria chart with the factors that you've brainstormed as a class. Have students research their chosen method from their stakeholder perspective and fill out the criteria chart (links provided below could help direct students to resources).

*\*Note: Have students be critical when exploring resources and remind them to look for any bias that may be present in the information they encounter during their research.*

## CONCLUSION AND CONSOLIDATION

### Town Hall

Work with the class to create a checklist for an effective presentation that you can use for assessment during the mock town hall.

Hold the town hall discussion about the two different extraction methods from each of the stakeholder perspectives. Have students present with their partner or group to the whole class. Alternatively you could have two or three smaller groups that work together in a round table to present their perspectives, and the teacher can rotate around each group to assess and help when needed.

Take a class vote (using your preferred online method or simply have a show of hands/paper ballots). Ask students: From a stakeholder perspective, which method of oilsands extraction would you choose?

### Personal Response

Consolidate learning by having students write a response that answers the following question based on their own personal perspective (not from the stakeholder's): If Alberta was to move to only one method of extraction should it be surface mining or SAGD? Explain your rationale.

## EXTEND YOUR GEOGRAPHICAL THINKING

Explore the competing perspectives about Canada's oilsands.

Read this article from National Geographic: <https://www.nationalgeographic.com/environment/2019/04/alberta-canadas-tar-sands-is-growing-but-indigenous-people-fight-back/>.

And compare it to this article: <https://www.jwnenergy.com/article/2019/04/12-ridiculous-factual-problems-latest-oilsands-smear-national-geographic/>.

Which article do you believe? Why? Consider how to evaluate the information in these articles by examining the following: who is the author, company owner/publisher of article, bias/perspective, sources, etc.

## MODIFICATIONS

You could omit the town hall and have a chart with each stakeholder represented on the chart for the two extraction methods, which students can complete independently to answer the question.

You could select the resources that students will use in their research.

## ASSESSMENT OPPORTUNITIES

- Pre-assess student understanding of what the oilsands are and where they are located.
- After introducing the methods of extraction, assess students' understanding.
- Co-create criteria for research. Provide feedback on their completed charts.
- Co-create criteria for a presentation checklist for the town hall.
- Evaluate their final personal reflection.

## LESSON IMPLEMENTATION

- <https://energyiq.canadiangeographic.ca/>
- <https://www.capp.ca/>
- [https://www.nwf.org/~media/PDFs/Global-Warming/2014/nwf\\_issue\\_briefs\\_Interactive2.pdf](https://www.nwf.org/~media/PDFs/Global-Warming/2014/nwf_issue_briefs_Interactive2.pdf)
- <https://www.cosia.ca/>
- <https://www.macleans.ca/politics/nafta-watchdog-wants-to-probe-oilsands-tailings/>
- <https://www.aer.ca/providing-information/by-topic/oil-sands/oil-sands-mining>
- [McMurray Metis Slide Show](#)
- <http://www.ramp-alberta.org/resources.aspx>

# STUDENT ACTIVITY SHEETS



# ROLE PLAYING CARDS

**Environmental  
SAGD**

**Oil Company  
SAGD**

**Canadian  
Government**

**Environmental  
Surface Mining**

**Oil Company  
Surface Mining**

**Canadian Government  
Surface Mining**

**Local Indigenous Group  
SAGD**

**Community Members  
SAGD**

**Local Indigenous Group  
Surface Mining**

**Community Members  
Surface Mining**