

RESOURCE LIBRARY
ACTIVITY : 50 MINS

Environmental Decision-Making

Students explore a real-world social issue and construct a decision recommendation from one stakeholder's perspective. Students discuss the influence, complexity, and interconnection of relationships that occur during the decision-making process.

GRADES

9 - 12+

SUBJECTS

Biology, Ecology, Earth Science, Geography, Human Geography

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OVERVIEW

Students explore a real-world social issue and construct a decision recommendation from one stakeholder's perspective. Students discuss the influence, complexity, and interconnection of relationships that occur during the decision-making process.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/environmental-decision-making/>

DIRECTIONS

1. Connect to students' prior knowledge about decision-making processes.

Set the stage by activating students' prior understanding about the decision-making process by asking them to think about a decision they had to make recently. Ask: *What was the decision about? How did you go about making your decision? What steps did you take? Who was involved in the process of making the decision? Did you seek any outside information to*

influence the decision you made? Ask a couple of students to share their thinking with the class. At this point, the focus of this discussion is to get a few examples and to get students thinking about the processes they use when making decisions.

2. Provide information about the environmental controversy around the Lake Turkana dam case study.

Explain to students that there are decisions other than just those that individuals make for themselves. In many instances, people from multiple nations or communities are faced with having to collectively make decisions about shared natural resources. Give students the Case Study: Friends of Lake Turkana handout and ask them to read for understanding. Ask students to write any questions they might have. After reading the case study, have a brief discussion with the class to check for understanding. Ask:

- *What is the reason for building the dam? (to generate electricity for the surrounding areas through a hydropower station within the dam)*
- *Who does the dam benefit? (It will benefit the surrounding areas, particularly rural Ethiopia, Kenya, Sudan, and Djibouti.)*
- *What would happen to the environment in the area if the dam were built? (The dam affects water flow into the Lake Turkana region. It would lower the lake level, and it could change the salinity of the lake and affect its inhabitants.)*
- *What would happen to the people and other living things in the area if the dam were built? (The indigenous people practice flood-retreat agriculture. The dam would alter the outflow and would reduce seasonal flooding. The lack of the rich silt would destroy flood-retreat agriculture.)*

3. Have students portray one of the stakeholders from the Lake Turkana dam case study.

Ask students to brainstorm all the individuals that might be involved in the decision about the construction of the Gilgel Gibe III Dam. Explain that the individuals they have identified are called *stakeholders*. A stakeholder is a person, organization, living organism, or physical environment that is affected by the decision that is made. Some stakeholders, such as people and organizations, have a strong voice in the decision and generally are a part of the decision-making process. Other stakeholders, such as plants, animals, and the physical environment, are silent and do not have a voice in the decision or the process for making a

decision. Remind students that the Friends of Lake Turkana case study is a real-world environmental conflict and, therefore, has identified stakeholders. Write the list of stakeholders identified in the case study on the board. (Ethiopian government, Salini Construttori [Italian construction company], Chinese government, Kenyan government, indigenous communities, Lake Turkana aquatic life, migratory waterfowl, tourism industry) Explain to students that they will take on the role of one of these stakeholders and will write a decision statement based on their knowledge and viewpoint of that stakeholder. Divide students into small groups of three, and assign each group one of the stakeholders. Ask students to read about their stakeholder in the Case Study: Friends of Lake Turkana handout and work as a group to write a decision statement from their stakeholder's perspective on a sheet of paper.

4. Have stakeholder groups share their decision statement.

Ask each group to share its decision statement with the rest of the class. Record the decision statements on the board for all students to see. After all groups have presented, have a class discussion about the similarities and differences among the various stakeholder statements. To promote discussion, categorize the stakeholders that are in favor of building the dam and the stakeholders that are not in favor of the dam. Compare and contrast the reasoning of each of the stakeholders groups. Have a discussion about what students discover. Ask one of the students in each group to hold on to the decision statement from their stakeholders' perspective. Students will refer to this document in Activity 4 of this lesson.

5. Have students reflect on the decision-making process.

Explain to students that in this activity, they were asked to make a decision from one perspective. Ask: *What do you think it would be like if you had to negotiate the multiple perspectives and needs of all stakeholders? Do you think you could come to a decision in which all involved would be happy? If yes, why? What would the process be?* Next, have students individually reflect upon the process by writing their thoughts on a piece of paper. Use the following questions to guide their reflections:

- *What were some of the roadblocks you experienced in making your decision?*
- *Was there anything you considered but was not necessary in your discussions during your decision-making process? Explain.*

- *How did your group weigh the different consequences when making your decision statement?*
- *Did you feel that all stakeholders got a fair voice in the process? Why or why not?*

Informal Assessment

As students are still formulating their ideas, informally assess students based on their participation in the discussion and their reflection statements.

OBJECTIVES

Subjects & Disciplines

Biology

- Ecology

Earth Science

Geography

- Human Geography

Learning Objectives

Students will:

- identify and analyze the role that stakeholders play in determining the outcome of a complex environmental decision

Teaching Approach

- Learning-for-use

Teaching Methods

- Discussions
- Reading
- Role playing

Skills Summary

This activity targets the following skills:

- 21st Century Themes
 - Environmental Literacy
 - Financial, Economic, Business, and Entrepreneurial Literacy
 - Global Awareness
- Critical Thinking Skills
 - Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Analyzing Geographic Information
 - Answering Geographic Questions
 - Asking Geographic Questions
 - Organizing Geographic Information

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- Reading Standards for Informational Text 6-12:

Key Ideas and Details, RI.9-10.1

- Reading Standards for Informational Text 6-12:

Key Ideas and Details, RI.9-10.2

- Reading Standards for Informational Text 6-12:

Key Ideas and Details, RI.9-10.3

- Speaking and Listening Standards 6-12:

Comprehension and Collaboration, SL.9-10.1

- Speaking and Listening Standards 6-12:

Comprehension and Collaboration, SL.11-12.1

- Writing Standards 6-12:

Text Types and Purposes, W.9-10.2

Preparation

What You'll Need

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction
- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

This work is modified from the decision-making process called Stakeholder Consequences Decision-Making (SCDM) process. This process is generally used when individuals are at the stage of making a decision. The SCDM process consists of four stages: establishing constraints and considerations; identifying consequences; assessing impact on stakeholders; and weighing impacts on stakeholders. The case studies used in this activity and others you can find in the National Geographic Education website have already articulated a decision. The SCDM model was modified to be used as an analysis tool. The modification includes identifying stakeholders, influences over the decision, and consequences of the decision.

Prior Knowledge

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Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
aquatic	<i>adjective</i>	having to do with water.
basin	<i>noun</i>	a dip or depression in the surface of the land or ocean floor.

Term	Part of Speech	Definition
collective decisions	<i>noun</i>	decisions made by a group of individuals that account for the needs of many others.
conflict	<i>noun</i>	a disagreement or fight, usually over ideas or procedures.
controversy	<i>noun</i>	disagreement or debate.
dam	<i>noun</i>	structure built across a river or other waterway to control the flow of water.
debate	<i>verb</i>	to argue or disagree in a formal setting.
desert lake	<i>noun</i>	large body of water in a desert region, often characterized by high salinity.
ecology	<i>noun</i>	branch of biology that studies the relationship between living organisms and their environment.
environment	<i>noun</i>	conditions that surround and influence an organism or community.
environmental impact	<i>noun</i>	incident or activity's total effect on the surrounding environment.
flood-retreat cultivation	<i>noun</i>	agricultural method that relies on silt left on a flood plain (following a flood) to cultivate crops.
geo-literacy	<i>noun</i>	the understanding of human and natural systems, geographic reasoning, and systematic decision-making.
hydroelectric power	<i>noun</i>	usable energy generated by moving water converted to electricity.
indigenous people	<i>noun</i>	ethnic group that has lived in the same region for all of their known history.
individual decisions	<i>noun</i>	Decisions that are made by an individual that only account for that individual's needs
outflow	<i>noun</i>	water, sediment, and chemicals discharged by a river or other flowing body of water.
seasonal flooding	<i>noun</i>	overflowing of a body of water from its banks, usually predicted by yearly rains or storms.
stakeholder	<i>noun</i>	person or organization that has an interest or investment in a place, situation, or company.
upstream	<i>adjective</i>	toward an elevated part of a flow of fluid, or place where the fluid passed earlier.
upstream	<i>adjective</i>	toward an elevated part of a flow of fluid, or place where the fluid passed earlier.
waterfowl	<i>noun</i>	birds that live near the water.

For Further Exploration

Articles & Profiles

- [National Geographic Education: Wild Winds—Lake Turkana Wind Power Aims to Create Electricity for Kenya](#)
- [UNESCO: World Heritage—Lake Turkana National Parks](#)
- [Freshwater Ecoregions of the World: Lake Turkana](#)

Maps

- [National Geographic Education: Geography of Lake Turkana](#)

Websites

- [International Rivers: List of Dam-Threatened World Heritage Sites](#)
- [National Science Teachers Association: Learning to Make Systematic Decisions](#)
- [Encyclopedia of Earth: Lake Turkana National Parks, Kenya](#)
- [Friends of Lake Turkana](#)

