



Time:

Three to five 50-minute periods

Summary:

In this lesson, students will synthesize and apply what they have learned in the unit. They will participate in a role-play representing different stakeholders at a mock convention on water use in the East African savanna.

Materials:

Signs for each group

Student handout:

- Convention on Water Use in the Savanna
- Guiding Questions
- Discussion questions
- Human-land-climate loop diagram

Computers with internet access for students (optional)

Additional background material can be accessed at:

<http://clip.msu.edu/Kenya%20E-Book.htm>
pages 56-73

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Convention on Water Use in the Savanna

Objectives

Students will be able to

- develop a plan for actions that would benefit a given group in the role play
- compose a persuasive essay defending their proposal
- defend their position in a mock convention
- apply the human-land-climate loop to different groups of people living in the savanna
- predict how different groups will be impacted by climate change in the savanna

Background

Water is a scarce resource in the East African savanna. It is needed for use by people, crops, livestock, and wildlife. As climate change results in less rainfall, water sources begin to dry up and competition for water resources becomes greater. In this lesson, students take on the roles of different stakeholders in the savanna to argue for their access to water sources.

Vocabulary

Borehole

Stakeholder

Non-governmental organization (NGO)



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Procedure

1. Activate students' prior knowledge and prime them for the lesson by asking:

- After learning about how people may adapt to climate change in the East African savanna, what do you see as the biggest challenges faced by people living in the savanna?
- If you were a herder, how would you be affected by decreased rainfall?
- If you were a farmer, how would you be affected by decreased rainfall?
- How might wildlife be affected by decreased rainfall?

Tell students: In this lesson, you will take part in a role-play. You will be participants in a convention on water use in the East African savanna. You will be representing different stakeholders who have different needs and priorities. You will have to advocate for what your group wants and try to negotiate with the other groups to find a solution to using the limited water supply in the savanna.

2. Introduce the scenario.

You are in the savanna of the fictitious East African country, Kenzania. Due to changes in climate, water sources that used to be relatively reliable have begun to dry up. In the fictitious Mangoro region of Kenzania, various groups share the use of the Mangoro River, Mangoro Lake, and the Mangoro borehole. These three water sources provide water for household use, livestock, wildlife, irrigation for farming, and tourist lodges. There is no longer enough water to go around. Before things get too bad the government wants to implement a climate change action plan to mitigate the effects of climate change in the savanna. The Kenzanian government

has organized a convention to seek input and solutions to the problem from the stakeholders. Because the government is at the convention as a stakeholder, an outside moderator has been assigned to lead the discussions, and a panel of arbitrators has been assigned to make the final recommendations.

3. Assign students to groups representing different roles in the convention. Assign a small group of students or bring in parent or teacher volunteers to serve as arbitrators. The teacher will act as the moderator.

Roles:

1. Herders
2. Farmers
3. Wildlife
4. Tourism
5. Government

4. Provide students the background information for all of the stakeholders. It will help each group to understand the interests and point of view of the other stakeholders. Have students work together in groups to first fill out the human-land-climate loop from their group's perspective. This will help them to construct their argument of why their group should be given priority in the savanna. Students should then write a brief persuasive essay to argue why their group should be given priority in the savanna and how they are going to reduce their impact on the savanna. This may take several class periods.

This lesson may be done as an interdisciplinary lesson with students composing their persuasive essays in their English/Language Arts class.

Optional extension: Assign students to conduct further research on their stakeholder group to add to

Notes

The issues involved in this real-life problem of water use in the East African savanna are incredibly complex. While students will not be able to fully understand all of the complexities, this role play will introduce them to some of the issues and viewpoints of a few of the stakeholders in the savanna.

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their group's arguments. This can be done in class or as homework using the websites provided.

5. Set up the convention. Place signs around the room representing each stakeholder group and have the groups take their places. The moderator and arbitrators should be at the front of the room. Each group will need a spokesperson to read their persuasive essay, and all of the group members should be involved in answering questions and defending their position. The teacher may ask students to dress up and/or use props to represent their groups. The convention may need to be scheduled over several class periods.

6. Begin the convention. Have each group present their persuasive essay. Other groups may ask clarifying questions. *Teachers may choose instead to lead this activity as a formal debate or to determine their own rules and procedures for the mock convention.*

7. After all of the groups have presented, the moderator will lead a discussion to try to come to a decision on how to use the available water sources. Each group should defend their position while seeking solutions that may be beneficial to multiple interests or offer a compromise. Arbitrators may ask follow-up questions of the stakeholder groups.

8. The panel of arbitrators will make a decision on how the water resources will be used to reduce the impact of climate change on the savanna, reporting back to the convention attendees and explaining how they came to their decision.

9. Discussion: After the decision has been made, have each group answer the discussion questions and share their answers with the class.

10. Conclusion: This is the end of the EACLIPSE lessons. You may choose to assign a reflection assignment as homework for students to discuss what part of the curriculum had the greatest impact on them and whether/how it affected their views on climate change.

Optional Extension: 2nd Convention on Water Use in the Savanna

Reconvene the stakeholder groups for a second convention and inform them that there has been a change in the situation. It is now six months later and one of the water sources (e.g. the river) has dried up after an extended drought.

Ask each group to prepare a statement on how this would affect them and what solution they propose. Go through the process of role-playing a second convention, have the arbitrators make a new decision, and see how losing one water source affected the outcome.

Lead a discussion with students about the effects of the change on the process and the outcome.

Assessment

Were students able to develop a plan for actions using the human-land-climate loop that would benefit a given group in the role play, compose a persuasive essay defending their proposal, and defend their position in the mock convention?

Web Resources

The websites of these organizations can be used by students to conduct further research on their positions:

Herders

Maasai Environmental Resource Coalition (MERC): www.maasaierc.org;

Farmers

MVIWATA ("The defender of the farmer is the farmer himself"): www.esaff.org/Tanzania

Wildlife

Wildlife Conservation Society: www.wcs.org

Tourism

Ngorongoro Serena Safari Lodge: www.serenahotels.com/serenangorongoro

Government

Tanzania Ministry of Natural Resources and Tourism: www.mnrt.go.tz
Tanzania National Parks
<http://www.tanzaniaparks.com/>



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Scenario:

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Stakeholder Positions:

1. Herders

You are representatives of the Herders Resource Council (HRC), a Kenzania NGO dedicated to defending access to resources and preserving the culture of the traditional herders of Kenzania. Your people, whose livelihood depends on herding cattle, sheep and goats, have always included the Mangoro River and Mangoro Lake in your migration. The Mangoro region is where you take your livestock towards the end of the dry season, when your other water sources have dried up. When you are in the reserve you build temporary homes, use the borehole for household use, and water your livestock at the Mangoro River. When the government established Mangoro Lake as a Wildlife Reserve, you were promise access during your seasonal migration, and you build temporary homes in the Reserve for the time you keep your livestock there. The Mangoro borehole was dug several years ago by an international aid organization to provide safe drinking water for all of the households in the area. HRC members donated labor to help dig the borehole and they continue to contribute to maintaining the borehole.

2. Farmers

You are representatives of the Kenzania Farmers Organization (KFO), a national NGO that represents the interests of farmers. Your members are mainly farmers who moved to the savanna because of overpopulation and land degradation in the forest region of Kenzania. A small number of your members are traditional herders who settled in the area and began farming. For several years, the Kenzania government had a program that provided farmers with individual land titles and access to the Mangoro River for irrigation to boost agricultural production in the region. You have nowhere else to go, and you depend on water from the Mangoro River to grow your crops (maize and beans and irrigated vegetables) , because there has not been enough rain to grow your crops without irrigation. Your families depend on the Mangoro borehole for household use.

3. Wildlife

You represent the international NGO, Wildlife Conservation Association (WCA). Your organization advocates for protecting wildlife species and promotes ecotourism, tourism that is designed to have a minimal impact on the environment, educate people about environmental issues, and contribute to conservation efforts. In Kenzania your organization is focusing on developing wildlife corridors so that savanna wildlife species can

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continue their seasonal migrations without the risk of being hunted or having their migration paths blocked by homes, farms, or other development. WCA has been working with the Kenyan government and local communities to establish Wildlife Management Areas (WMAs), protected areas managed by local village associations that will maintain the wildlife corridors. In these Wildlife Management Areas WCA hopes that the water will be used mostly for wildlife and minimal use will be used for tourism. WCA believes that the most effective way to protect East African wildlife is to educate local people about conservation, involve them in conservation efforts, and help them reap some of the economic benefits of wildlife tourism.

4. Tourism

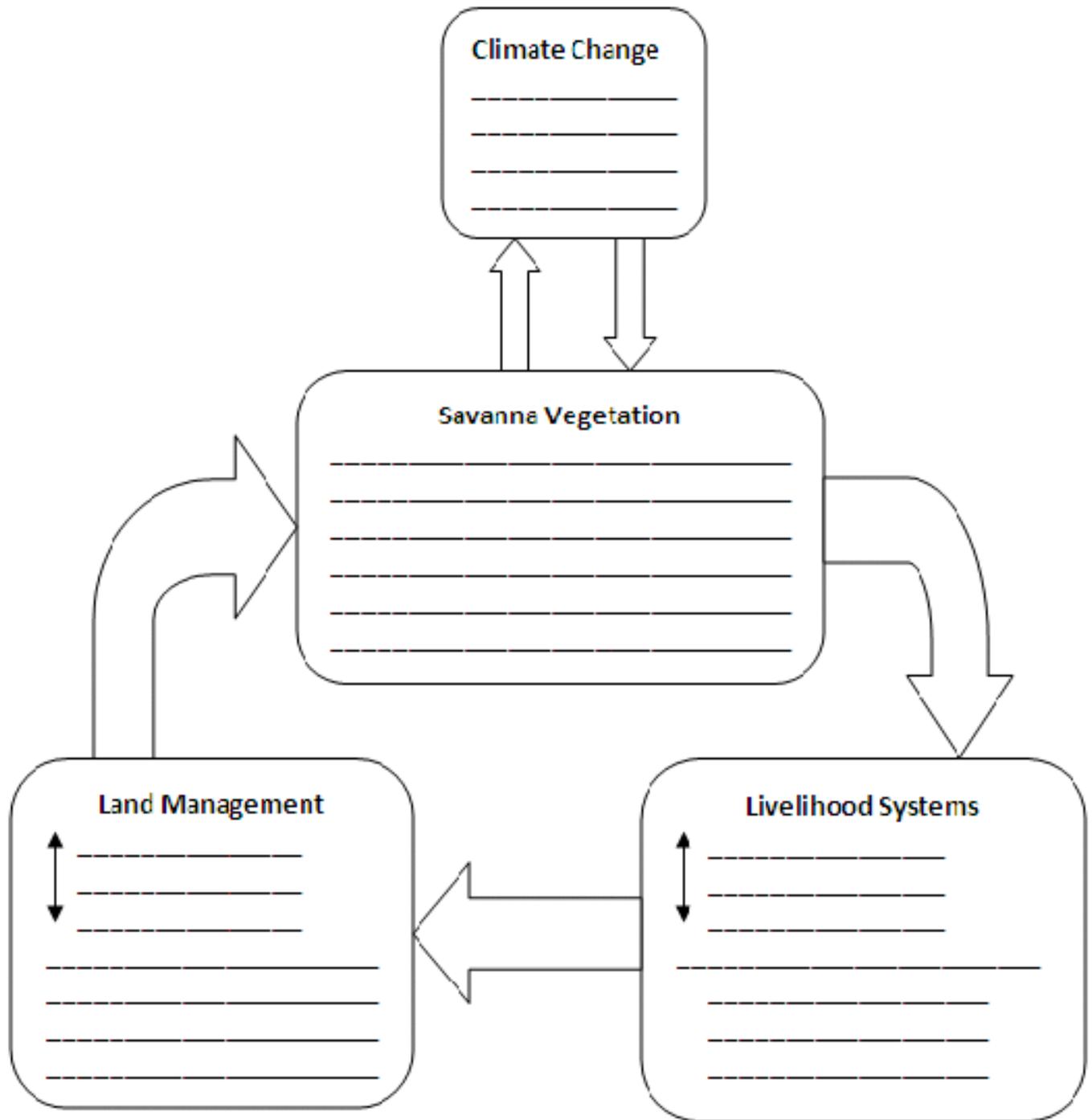
You are the managers of the largest tourist lodges in the Mangoro region. You operate the lodges and provide tours of the game parks to tourists from all over the world. Your lodges employ many of the local residents and your industry provides a large amount of the foreign exchange the country depends on. The lodges have a fund to help local communities through projects supporting education, sanitation, tree planting, and culture (traditional music, dance, and handicrafts). The money brought in to the game parks by the tourists who stay at your lodges helps to protect and conserve the environment and the wildlife of the savanna. Your lodges bring in the most money to the area and you need continued access to the lake and borehole to provide water for wildlife and to your lodges.

5. Government

You represent the Kenyan Ministry of Natural Resources and Tourism (MNRT). You are in the difficult position of trying to balance the needs of all of the different stakeholders. While the government initially encouraged the settlement of farmers in the area, the risks and environmental effects of farming in the region have increased as water has become scarce. While you recognize that herders had traditional water rights in the region, you also need to promote tourism because of the revenue it brings to the country. It is also very important that you protect the wildlife species that this tourism industry is based on.



Human-Land-Climate Loop



Guiding Questions

When you write your group's position to present at the convention, try to address the following:
How will my group be affected by climate change and reduced water access?

How will the savanna be affected by my group's use of the savanna?

What is my group asking for?

How will my group reduce our impact on the savanna to reduce the impact of climate change?

What regulations should be put in place that could benefit multiple stakeholders?

Why should my group have rights to use the water sources?

Why should other groups not have rights to the water sources?

What rights has my group had to these water sources historically?

What access does our group currently have to these water sources?

What are the possible consequences if our group is or not given rights to the water resources?

How can we convince the other groups that giving us what we need is in everyone's best interest?



Discussion Questions

How does your group feel about the decisions that were made?

How much were you given of what you asked for?

What will be the immediate consequences of the decision for your group?

What could be some long-term consequences of the decision for your group?

How might this decision affect the environment?

Think back to the savanna human-land-climate system loop. How might this decision affect savanna vegetation, people's livelihood systems, land management, and/or climate?

Can you think of any potential unintended consequences that might result from the decision?

You are no longer representing your stakeholder group. What solution do you propose?