



FOOD FOR 9 BILLION

The Challenge of Feeding the World

A Race for Farmland

Teacher Notes

Before You Start

Grade Level:

Grade 7-10

Concepts Covered:

Arable land, water resources, conflict over land use and management

Time Frame:

35-50 minutes

Materials Needed:

Student handout *A Race for Farmland*, computers with Internet access

Overview

Using a television story and an interactive map, students will investigate the complexities associated with finding arable land and producing food.

Objectives

- Students will understand that arable land is needed for food production, but that arable land alone does not guarantee lack of hunger in a country.
- Students will be able to use multiple sources of information to draw conclusions about arable land, water resources, and hunger.
- Students will explore the impact of land-lease and resettlement programs.

Prior Knowledge

None.

Teaching Tips/ Activity Sequence

1. Activate students' prior knowledge and introduce the activity by asking the class about what is needed to produce food crops (arable land, water, sunlight, favorable temperature). Continue by discussing what is needed to deliver the food to the people who need it (an efficient market system with the infrastructure needed to move food). Pose two questions:
 - What are the benefits and limitations of consuming only locally produced food?
 - Do countries have the right to lease their land to other countries that need it for food production?
2. Allow students to work alone or small groups to complete the activity.
3. Gather the group for a final discussion. You can return to the two questions you posed in the introduction and add others, such as:
 - What are the students' opinions of the Ethiopian government's land-lease and local resettlement program?
 - What do you think the impact of the program will be on the local / indigenous people?
 - Does the amount of arable land or renewable water in a country predict how hungry or well nourished the people of the country will be?

Extensions

- Explore more about the impact of the lease and resettlement program on the indigenous people of the Gambella with other media resources:
 - Guardian article about relocation program: <http://www.guardian.co.uk/global-development/2012/jan/17/ethiopia-relocation-programme-report>
 - PRI The World piece about relocation: <http://www.theworld.org/2011/12/saudi-arabia-leased-ethiopia-land-rice-export/>
 - About the Gambella region (from GeoCurrents): <http://geocurrents.info/geopolitics/gambella-ethiopia%E2%80%99s-troubled-western-lowlands>
- More lessons on the challenges of feeding the world's population are available at <http://www.ricediversity.org/foodfor9billion>.

Standards

Resources

- <http://cironline.org/reports/ethiopia-battle-land-and-water>
- <http://cironline.org/reports/map-world-food-statistics>

Acknowledgements

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Name: _____



Date: _____ Class: _____

A Race for Farmland

“Land is political. Land is very emotional. And land is our identity.”
~ Anuak leader Okok Ojulu

What are the complexities associated with maximizing food production from arable land?

Part 1: Listen and Ponder

Go to <http://cironline.org/reports/ethiopia-battle-land-and-water> and watch the video about a controversial Ethiopian resettlement program, part of the global race to secure prized farmland.



1. In what region of Ethiopia do the Anuak people live?
Describe their traditional lifestyle.
2. Describe how and why agricultural production has changed in the Gambella region.
3. What two natural resources are precious to both the Saudi-based rice company and the Anuak people?
4. Why are those two resources so precious?

Part 2: Explore the Map

Many types of food production start with farming, which requires arable, or farm-able, land and the right amounts of water. Go to <http://cironline.org/reports/map-world-food-statistics>. Choose “Arable Land” on the pull-down menu.

5. Look at the legend / key. How is arable land expressed on the map?

Name: _____



Date: _____ Class: _____

A Hungry World?

6. Which countries in the world have more than 0.75 hectares (1.85 acres) of arable land per person?
7. Find China on the map. It has only _____ hectares of arable land per person and yet _____ of the world's population lives in that country. What do you think are the factors that keep this country at only a moderate, not seriously alarming, hunger index?

In addition to soil, crops also need water. Let's take a look at the distribution of water sources. Choose "Renewable Water Resources" on the pull-down menu.

8. Look at the legend / key. How are renewable water resources expressed on the map?
9. Where are most of the countries with very limited (under 1000cm^3 per person) water resources?
10. Why do you think that water resources are so limited in those countries?

Wrap Up

Take another look at Ethiopia and Saudi Arabia. First, compare the amount of arable land, the amount of water, and the hunger index in Ethiopia and in Saudi Arabia. Then, explain what you think accounts for the difference in the hunger indices.

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Part 1: Listen and Ponder

Go to <http://cironline.org/reports/ethiopia-battle-land-and-water> and watch the video about a controversial Ethiopian resettlement program, part of the global race to secure prized farmland.



1. In what region of Ethiopia do the Anuak people live?
Describe their traditional lifestyle.
The Anuak people live in the Gambella region. They grow maize (corn) in wetter months and farm closer to the river in the dry season.
2. Describe how and why agricultural production has shifted in the Gambella region.
Agriculture has shifted from small-scale maize and other food farming to large-scale rice farming. The Ethiopian government officially owns title to all the land, but farmers have traditionally had the right to use it. However, the Ethiopian government leased large portions of land – which the Anuak used to live on and farm – to a Saudi Arabia-based company that is building a huge rice farm on the land.
3. What two natural resources are precious to both the Saudi-based rice company and the Anuak people?
Arable land and water are precious to both groups.
4. Why are those two resources so precious?
Student answers will vary. Sample answer: Land is needed to grow food crops and water is needed to help the crops grow. Many countries, like Saudi Arabia, do not have enough good land and water to grow enough food to feed the people in their countries.

Part 2: Explore the Map

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A Race for Farmland

5. Look at the legend / key. How is arable land expressed on the map?
Arable land is expressed in hectares per person. Dark maroon means that in that country, there is more than one hectare of farm-able land per person.
6. Which countries in the world have more than 0.75 hectares of arable land per person?
Canada, Kazakhstan, Australia, Niger, Argentina, Russia
7. Find China on the map. It has only 0.08 hectares of arable land per person and yet one fifth of the world's population lives in that country. What do you think are the factors that keep this country at only a moderate, not seriously alarming, hunger index?
Answers will vary. Guide students to read the pop-up window about China, which discusses outsourcing cereal and soy production to Africa and South America.

In addition to soil, crops also need water. Let's take a look at the distribution of water sources. Choose "Renewable Water Resources" on the pull-down menu.

8. Look at the legend / key. How are renewable water resources expressed on the map?
The darker the color, the more cubic meters of water per person. In general, countries that are darker red have more renewable water resources.
9. Where are most of the countries with very limited (less than 1000 cm³ per person) water resources?
Northern & Saharan Africa; much of the Middle East; some of middle Asia: Turkmenistan, Uzbekistan; Southern Africa, Kenya, and Somalia; Bangladesh
10. Why do you think that water resources are so limited in those countries?
Student answers will vary. Accept all reasonable answers that are logical.

Wrap Up

Take another look at Ethiopia and Saudi Arabia. First, compare the amount of arable land, the amount of water, and the hunger index in Ethiopia and in Saudi Arabia. Then, explain what you think accounts for the difference in the hunger indices.

Ethiopia has 0.17 hectares of arable land per person and Saudi Arabia has less (0.12 hectares per person). Neither country is water-rich, but Ethiopia has 1503 m³/per person compared to Saudi Arabia, which has only 90 m³/per person. Despite this, the hunger index in Ethiopia is alarming while the hunger index in Saudi Arabia is merely high.

Student answers about reasons for difference will vary. Saudi Arabia is a much wealthier country, and thus can afford to import food and transport food where it is needed.