

Sustainable Agriculture In Ethiopia

Introduction:

Global warming, climate change, misguided management and a host of political, social and economic woes often have caused hunger and starvation to dominate media coverage and colour our perception of Africa and its people. A more positive story can be told by viewing initiatives to restore sustainable development. This unit provides discussion of the topic through the case study of Ethiopia. Many of the activities and challenges, however, could be adapted to allow students to study the issue of sustainable agriculture looking at different climates, situations, crops and markets in a number of different countries in Africa.

Instructional Level

The unit is designed to be accessible from grade 5 up from the point of view of the reading level of materials. Activities can be adapted to challenge Junior, Intermediate and Senior students. The unit provides activities which meet Ministry guideline objectives for English, Science, Geography, Media, Business, Food and Nutrition, History, Communications and Technology, Anthropology, Psychology and Sociology, Economics, Politics, Art, Music and Drama. A chart of the ministry objectives which the unit covers or touches upon is included at the end of the Educator's Guide for this unit. Rubrics to assist with evaluating most components are intercalated with corresponding student worksheets.

Components

The **Unit Opener** activity consists of a series of **Geography Activities**. The Unit Opener can be used with any or all of the units. It is described in the general **Introduction to Afroprobe. For A Day in the Life of A Child**, there are an additional eight components:

1. **Orientation Activity:** Defining Sustainable Development (A)
2. **Reading the Focus Article "Sustainable Agriculture in Ethiopia":** (includes from page 1 **Activity B: Terms and Terminology:** vocabulary development
3. **Guided Reading (Activity C):** based on the Focus Article, "Sustainable Agriculture in Ethiopia"
4. **Inferring Meaning (Activity D):** unpacks implied meaning in the Focus Article
5. **Searching for Solutions (Activities E 1 and 2):** two questions that challenge student to see understand the need for development work that evolves in consultation with local people.
6. **The Story Through The Data (Activity F):** an exercise that allows students to gain understanding through interpreting statistical data on sustainable development
7. **Extension activities and Personal Response (Activities G 1 to 7):** provide consolidation and the opportunity to synthesize understanding through various strands of the curriculum.
8. **Making a Difference for Others (Activity H):** challenges students to respond through social action.
9. **Additional Teacher Resources (I):** A number of lesson ideas as well as further leads for connected research are provided.

Modus Operandi

There are many worksheets which are included in this unit. None can replace the value of honest and open discussion with your students. Discussion with partners, in groups and with a skilled teacher is the most valuable tool that exists. Through honest and open discussion that we can become aware of our own prejudices and biases. Equally, through discussion we spark each other to become more creative and we can share the joy of our learning.

Acknowledgement

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Sustainable Agriculture In Ethiopia

Suggested Order of Presentation with Notes for the Teacher

Unit Opener

See instructions in the Introduction to the **Educator's Guide**.

A Orientation Activity: Defining “sustainable agriculture”

- ⇒ Photocopy page one of the Student Worksheets and distribute to students.
- ⇒ Read and discuss with students the definition for “sustainable agriculture” to ensure comprehension of words like “profitability” and “preserving the environment”.
- ⇒ Ask students to complete the matching exercise and the Cause and Effect Graphic Organizer that follows.
- ⇒ Have students “pair and share” to discuss their choices.
- ⇒ Discuss with the class as a whole what they have learned from the activity. A copy of page 1 of the Student Worksheets follows with suggested responses. Students should begin to understand the vicious cycle in which drought and poor farming practices contribute to the downward spiral of the degradation of soils, lower yields, loss of livestock and hunger.

B Reading the Article, “Sustainable Agriculture in Ethiopia”

1. Photocopy and distribute to students the article. Have students read the article independently. You might suggest that they highlight the main points in each paragraph.
 - ⇒ Preview with students the headings in graphic organizer (Activity 3) to provide focus for their reading.
2. **Terms and Terminology**
 - ⇒ Students complete Exercise B on page 1 and pair and share their responses with a partner.
 1. drought-prone (par. 2): often suffering from a lack of rain.
 2. food secure (par. 5): able to grow enough food for themselves.
 3. rainwater-harvesting (par. 5): method for gathering rainwater.
 4. teff (par. 6): a grain used to make flour.
 5. reforestation (par. 7): planting trees to rebuild forests.
 6. a breadbasket (par. 8): grains for flour are grown there in quantity

Suggestions for Accommodations and Ideas for Differentiated Learning

Unit Opener

See instructions in the Introduction to the **Educator's Guide**.

A Orientation Activity: Defining “sustainable agriculture”

- ⇒ Use as schemata the **Photo Essay** that accompanies the Article: **Land rehabilitation in Ethiopia Improves Food Security** with Photo essay at All Africa.com: <http://fr.allafrica.com/photoessay/susdev/> (photo essay actually starts at: <http://fr.allafrica.com/photoessay/susdev/photo1.html>). Focus on the images and introduce to the students the key words that will appear later in the Student worksheets (e.g., drought, rainwater-harvesting, etc.)

B Reading the Article, “Sustainable Agriculture in Ethiopia”

1. Present the article as “Shared Reading”. Read aloud, paraphrasing, asking questions and modeling reflection during the reading of the text to promote better comprehension of the reading by more students. Consider using Exercise B 2 to pre-teach key vocabulary BEFORE reading the article.
2. **Terms and Terminology**
 - ⇒ Provide students with the following response bank to help them complete the activity:
 - a grain used to make flour
 - able to grow enough food for themselves
 - often suffering from a lack of rain
 - grains for flour are grown there in quantity
 - planting trees to rebuild forests
 - method for gathering rainwater

Sustainable Agriculture In Ethiopia

ANSWER KEY

A Orientation Activity: Defining “sustainable agriculture”

Before reading the article, let’s take a look at what geographers mean by “sustainable agriculture”. To start, here’s a basic definition.

Sustainable agriculture is “a method of agriculture that attempts to ensure the profitability of farms while preserving the environment”.

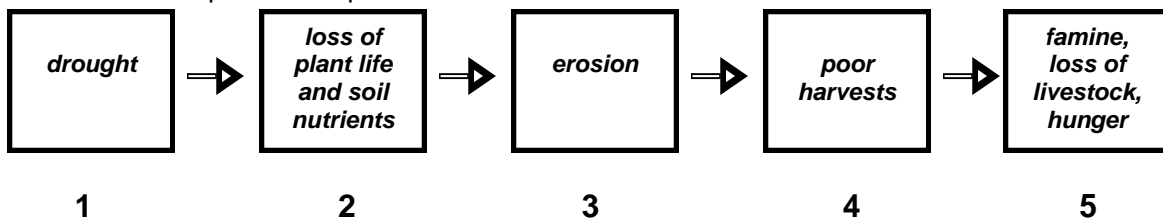
The definition is linked to the root verb, “to sustain”, which means “to maintain” or “to keep in existence”. Without “sustainable agriculture”, the existence of millions of people is literally at risk.

With a partner, match each of the following situations with one or more of the following possible agricultural outcomes:

loss of plant life and soil nutrients / erosion / poor harvests / famine / loss of livestock / hunger / migration

1. Planting the same crop year after year in a field **loss of plant life & soil nutrients, poor harvests**
2. Overusing pesticides and fertilizers **loss of plant life & soil nutrients, poor harvests**
3. Cutting down trees from hillsides to provide firewood **erosion**
4. Many years of drought **erosion, poor harvests, loss of livestock, hunger**
5. Not using any fertilizers at all **loss of plant life, soil nutrients, poor harvests, loss of livestock, famine, hunger**

Now, create a cause and effect diagram in which you place five out of any of the ten practices and/or outcomes in an order that show causality. Share, compare and discuss your diagram with a partner. A variety of combinations in responses are possible.



Climate change, unwise agricultural practices and economic hardship all contributed to a crisis in agriculture in the Horn of Africa which resulted in massive loss of life in the 1980’s. Ethiopia was one of the countries hardest hit by the resulting disaster.

B Terms and Terminology

Read the article, “Sustainable Agriculture in Ethiopia”. From the context of the reading, create your own definition for each of the following terms. Then check your answer by referring to a dictionary and/or discussing with a partner.

1. drought-prone (par. 2)
2. food secure (par. 5)
3. rainwater-harvesting (par. 5)
4. teff (par. 6)
5. reforestation (par. 7)
6. a breadbasket (par. 8)

C Guided Reading Organizer: Facts and Figures

- ⇒ Photocopy page 2 of the Student worksheets and distribute it to the students.
- ⇒ Have students reread the article and independently enter in point form and in their own words information that they find in the article to complete the organizer. You may wish to collect their responses to evaluate their comprehension. Suggested responses follow:

Famine relief

- has been championed by popular music groups
- aid was provided to Ethiopia during the famine of 1984-1985 in which thousands died
- is important but is not a permanent solution
- Ethiopians want to be able to take care of themselves

The reasons why agriculture in Ethiopia has been challenged

- poor quality of soil, not enough water for irrigation caused Ethiopia to lose its former capacity to support itself agriculturally
- changes in weather, drought, failure to gather enough rainwater, and deforestation have resulted in soil erosion

How Ethiopians are solving their agricultural challenges

- government projects support farmers
- with projects to divert rivers farmers can irrigate fields and triple their harvests
- reforestation projects are helping to stop erosion and allow soils to be enriched.

Signs of hope in Ethiopia

- better harvests improve people's nutrition and health, and provide profits for families to buy necessities and send children to school

The role of the International Community

- to work with Ethiopians to help them become self sufficient
- to provide food aid when it is needed
- to listen to Ethiopians to ensure that aid is delivered in accordance with their needs, wishes and experience

D Inferring Meaning

- ⇒ Instruct students to explain in their own words what each of the following quotations from the article means to them. Remind students to consider what was learned from the opening activity. Ask them to also consider what the phrases reveal about the author's "point of view". Suggested responses follow:
1. "This [growing food in a sustainable manner] is a particular challenge in Ethiopia where *in many places the soil is thin and water for irrigation is scarce.*" (par. 2): **the cycle of drought, loss of plant life, loss of nutrients, and erosion have become a vicious cycle that is hard to reverse. The author is**

C Guided Reading Organizer: Facts and Figures

- ⇒ Complete the task together with students: reread the story and help students identify key phrases and main ideas to highlight; work on helping students put into their own words target information.

D Inferring Meaning

- ⇒ Guide students using prompt questions to understand the implied meaning in the passages.
1. "This [growing food in a sustainable manner] is a particular challenge in Ethiopia where *in many places the soil is thin and water for irrigation is scarce.*" (par. 2): **ASK: What has happened to the environment in Ethiopia that has contributed to difficulties in growing food? Which words show that the author is worried about this?**
 2. "Food aid may save the life of people for the

- concerned about this situation.**
2. "Food aid may save the life of people for the time being, but *it's not a permanent solution.*" (par. 3): **Countries like Ethiopia cannot depend forever on foreign assistance. Perhaps other countries cannot afford to support countries like Ethiopia forever. The author believes that better solutions can be found. Maybe solutions for solving the problems in agriculture can be found.**
 3. "Reforestation is also needed, *to stabilize the hillsides and replenish the soil of nutrients.*" (par. 7) **When trees are cut down, the root systems that held soil in place are lost, erosion accelerates, and soil is washed by rain down the hillsides and lost, creating areas where it is difficult to grow crops. The solution is to plant trees to stop soil erosion, promote plant growth and thereby improve the quality of the soil in which not only is soil maintained, but enriched by the decay and natural composting of plants that will grow in stable areas. The author is providing the reader with concrete evidence of solutions other than "food aid" that can be provided.**
 4. "...Ethiopia is working toward *food self-sufficiency.*" (par. 8) **Through development projects launched by the government of Ethiopia and with assistance from non governmental organizations, Ethiopia is working towards being able to grow enough food to support its own people. The author voices a respect for the efforts made by Ethiopians themselves.**

E Searching for Solutions

1. Based on quote from the article:

"But it is critical to listen to Ethiopia's farmers, the CFGB says. They know best what needs to be done to make Ethiopia a breadbasket again."

- ⇒ Read the target quote with the students. Indicate to students that in the past, mistakes have been made in the delivery of aid to developing countries. Ask students why mistakes might have been made in the past? Ask them to predict what types of errors might have been made.

Suggested responses:

- **We sometimes see ourselves as the only experts and fail to recognize some traditional methods are valid: Not listening to local lead-**

time being, but *it's not a permanent solution.*" (par. 3): **ASK: Where does food aid come from? Why might it not continue to be provided? What do countries like Ethiopia need to do since food aid might not always be there? Which words show you that the author wants more to be done than just sending "food aid" to solve the problem.**

3. "Reforestation is also needed, *to stabilize the hillsides and replenish the soil of nutrients.*" (par. 7) **ASK: What do the trees do to keep soil in place? What does reforestation mean? How will it help stop soil erosion? How does this sentence add to the author's call to do more than provide "food aid" to solve the problem?**
4. "...Ethiopia is working toward *food self-sufficiency.*" (par. 8) **ASK: What solutions did you read about that will help make Ethiopia able to grow enough food for its own people? The author wrote, "Ethiopia is working toward food self sufficiency" instead of "We are helping Ethiopia to work toward food self sufficiency"? What is emphasized in the way the author wrote the sentence?**

E Searching for solutions

1. Based on quote from the article:

"But it is critical to listen to Ethiopia's farmers, the CFGB says. They know best what needs to be done to make Ethiopia a breadbasket again."

- ⇒ Read the target quote with the students. Indicate to students that in the past, mistakes have been made in the delivery of aid to developing countries. Guide students through your own questions to understand how mistakes might have been made in the past and help them predict what types of errors might have been made.

Suggested questions:

What might happen if those who deliver aid and assistance don't listen to local leaders and ex-

ers can lead to problems.

We sometimes fail to recognize that solutions that we bring may also cause other problems that people in developing countries quickly can identify: We can suggest using machines to do work and cause unemployment.

We sometimes do not understand the social implications of some of the changes that we suggest: We can cause greater poverty by mechanizing agriculture and causing unemployment.

We at times do not understand that high tech solutions may not be practical if key infrastructure is missing: Machines that we bring to a country may be hard to service due to a lack of expertise, a weak market in high tech goods and lack of spare parts.

2. Enrichment Activity (A Level 4 challenge!)

This activity is designed to be done by students who have excellent independent reading skills and the capacity for independent higher order thinking.

- ⇒ Instruct students to navigate to the **Peace Corps** website at peacecorpsonline.org and read, ***University of Denver: Developing an Agricultural Development Project in Ethiopia: Project Design, Bureaucracy and Professional Ethics by Ethiopia RPCV*** (June 14, 2003) by Professor Gene Ellis.
- ⇒ Challenge students to find examples in this reading that justify the final two lines from ***“Sustainable Agriculture in Ethiopia”***.
- ⇒ Indicate to students they should be on the lookout for examples of poor decision making by administrators of the non governmental organization that wanted to deliver AID and the results of those decisions. Students might organize a 2 column chart: one column for examples of decisions, and a second column for the results of the decisions.
- ⇒ Students may work independently or in pairs.
- ⇒ Have students submit their charts for evaluation.

F The Story Through the Data

Note: This activity should only be done after the focus article has been read and discussed.

- ⇒ Photocopy and provide students with a copy of Student worksheet page 5.
- ⇒ Discuss with students the meaning of key terms such as “per capita food production”, “cereal imports”, “food aid”
- ⇒ Review with students how to read single and

perts?

Is it possible to cause a new problem by bringing a solution?

What will happen in a society where many people are working the land if “cost saving” measures like agricultural machines are introduced? What will happen to the people who used to do those jobs?

What might happen if new machines that are introduced break down in a country where there are few places where parts and service can be found?

2. Extension Activity (A Level 4 challenge!)

Omit this activity for weaker students.

F The Story Through the Data

Note: This activity should only be done after the focus article has been read and discussed.

- ⇒ Photocopy and provide students with a copy of Student worksheet page 5.
- ⇒ Discuss with students the meaning of key terms such as “per capita food production”, “cereal imports”, “food aid”
- ⇒ Review with students how to read single and double line graphs and pie graphs.

- ⇒ double line graphs and pie graphs.
- ⇒ Have students complete the graph interpretations.
- ⇒ Discuss their responses. See the answer key which is provided at the end of this section of the document.

G Extension Activities & Personal Response

The personal response section is designed to provide a variety of opportunities for students to get to expand and express their understanding of some of the key issues that underpin the reading as well as an appreciation of the work that is done by Africans. For each of the choices, the key issue is identified below with some guidelines on how to present the assignment to students.

1. Global Warming

- ⇒ Read the challenge on Student worksheet 3 with the students.
- ⇒ Explain that the environmental problems that have contributed to the crisis in Ethiopia's agriculture are linked to the broader challenge of Global Warming.
- ⇒ Suggest to students that they find either in textbook materials or an online article that deals with Global Warming here in Canada. Have students also read the article of Nov. 9, 2006: ***Impoverished Africa Shudders Under Global Warming Threat*** from ***Terradaily News About Planet Earth*** at <http://www.terradaily.com/>.
- ⇒ Instruct students to make a list to compare the ways people are contributing to Global Warming in North America and in Ethiopia.
- ⇒ Challenge students to conclude where they think Greenhouse gases are be created the most based on observations from their readings.

2 To Give Or Not To Give—That Is The Question: Is International development AID a choice or a moral obligation? Discuss with regard to what you know about the causes and results of Global Warming.

- ⇒ Create groups with 6 students in each group.
- ⇒ Assign the following roles: Moderator (1), Recorder (1), "Pro-team" (2), "Con-team" (2).
- ⇒ Students work first in groups to discuss the issue, and record the main points of their discussion. Encourage students to provide support for their arguments from the readings they have done.
- ⇒ The Moderator presents the team's findings

- ⇒ Do the first question together with students.
- ⇒ Have students work with a partner to complete the other two graph interpretations.
- ⇒ Discuss their responses. See the answer key on the following page.

G Extension Activities & Personal Response

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1. Global Warming

For students who have difficulty with reading:

- ⇒ Have them use the United States Environment Protection Agency's website for kids: ***Climate Change Kids Site*** at <http://www.epa.gov/climatechange/kids/>.)
- ⇒ Ask them to go to the "**Can We Change the Climate**" section and make a note on how our lifestyle choices listed in the section, **When do you send greenhouse gases into the air?** are contributing to climate change.
- ⇒ Ask students to assess if any of the lifestyle choices provided in the list would be frequently in use in the developing world.
- ⇒ Ask students if the evidence suggests we are contributing to climate change not only in our own world, but also in the developing world.

2 To Give Or Not To Give—That Is The Question: Is International development AID a choice or a moral obligation? Discuss with regard to what you know about the causes and results of Global Warming.

- ⇒ For a group of students that need assistance, create teams that are exclusively "Pro" or "Con" or, alternatively, the teacher becomes the Moderator and Recorder for the students, and the activity is done with the larger group through question prompts from the teacher.
- ⇒ After each team presents their arguments, or after the class as a whole completes the initial activity, the teacher moderates an assess-

- to the class as a whole.
- ⇒ Discuss with the class as a whole the positions of the various groups.
- ⇒ Students may be required to provide a summary essay to conclude.

3 **Where Did My Cup Of Coffee Come From?**

- ⇒ Read over the challenge with the students.
- ⇒ Introduce the concepts of “fair pricing” and “corporate responsibility” and link them to the purchase of coffee beans by corporations from coffee growers.
- ⇒ Challenge the students to find out independently as much as they can about how 3 brands of coffee reached them, comparing the price they paid, and discovering (if possible) how much was paid to the growers.
- ⇒ Suggest students create their own visual displays of their findings. Brainstorm with the class the ways they might display the information (e.g., maps showing the route the beans take from the field to the table, 3 column chart to compare the price per kilo at each step of the journey and statements by the marketing companies, collection of labels)
- ⇒ Create a class exhibition, and discuss what the class discovered.

4 **Good News Report**

- ⇒ Create groups of 2 to 3 students.
- ⇒ Instruct students to independently visit the website of the **Ethiopian Institute of Agricultural Research** at <http://www.eiar.gov.et/> and navigate to the **News and Events** page. Tell students to read a selection of articles to find out what Ethiopians are doing to make their world a better place.
- ⇒ Indicate to the groups that each student will select an article, write a brief summary and be prepared to orally present it in role as a News Reporter.
- ⇒ Suggest to students that they should the weather report for the day, as well as a short and long range forecast. They can check out the **BBC Weather Centre** where they will find a 5 day forecast as well as a description of weather in general in Ethiopia which should allow them to create their own long range forecast.
- ⇒ Indicate to groups that they are invited to be as creative as possible in the creation of the atmosphere of an upbeat Ethiopian Radio Show, including Ethiopian music for transitions and voiceover, as well as names for the

ment of their findings and assists students to come to conclusions.

3 **Where Did My Cup Of Coffee Come From?**

- ⇒ Read over the challenge with the students.
- ⇒ Introduce the concepts of “fair pricing” and “corporate responsibility” and link them to the purchase of coffee beans by corporations from coffee growers.
- ⇒ Visit the **Fairtrade Website** with the students and read online with them why **Fairtrade** was created and what they have accomplished.
- ⇒ Brainstorm with students a list of coffee brands, coffee houses and places where they might purchase a cup of coffee.
- ⇒ Select 3 sources of coffee that the class would like to investigate.
- ⇒ Divide the class into 3 teams.
- ⇒ For one week, have the teams find out as much as they can about their coffee source. Use chart paper to create an Information page for each coffee source. At the start of each lesson, scribe what the students have discovered.
- ⇒ At the end of the week, discuss their findings.

4 **Good News Report**

- ⇒ Create groups of 2 to 3 students.
- ⇒ Select for students who experience difficulty reading 3 articles from the website of the News and Events page at the **Ethiopian Institute of Agricultural Research** at <http://www.eiar.gov.et/> and read them with these students. Students who can work independently are encouraged to select articles on their own and work through the instructions on the left.
- ⇒ Help students create a point form summary of the article by using the graphic organizer entitled “Good News Summary” on the following page.
- ⇒ Students write a brief paragraph from their point form summary and rehearse presenting it.
- ⇒ Students join their main group and are integrated into the group presentation.

reporters, and any other current events that they wish to include. Students can visit “**Addislive**” at <http://www.addislive.com/> for continuous online broadcast direct from Ethiopia for the top tunes today in Ethiopia!

5 Lyric Legacy

- ⇒ Read the challenge on Student Worksheet page 3 with the students.
- ⇒ Define with students the meaning of the term “Non governmental organization”.
- ⇒ Indicate to students that their song will be similar to a news report in which the lyrics provide the 5 Ws of a good news story.
- ⇒ Emphasize their song should highlight the positive accomplishments of the people of Ethiopia.
- ⇒ Provide time for students to teach and rehearse their song in a group.
- ⇒ Decide whether you would like students to use computer graphics and “Wizard” formats to create their album cover, or if you want them to render their own drawings (according to what type of evaluation you wish to derive for the artistic component of the piece).
- ⇒ Create an “Ethiopian Idol” sing off of the products.

6 Picture Perfect

This is a simpler challenge. It can be done by students of any level. Advanced students should focus on some of the other challenges in this section.

- ⇒ Read the challenge on Student Worksheet page 3 with students.
- ⇒ Challenge students to find images that celebrate the accomplishments of the people of Ethiopia, and to use language that celebrates progress and development. A number of photo essay resources are suggested in the **Resources** section of this manual.
- ⇒ Review with students how to use PowerPoint.
- ⇒ Vary the level of difficulty by adding to the technical requirements (insert an appropriate music track to accompany the images, use the program’s tools for animation, create a sense of style through the repetition in use of fonts, backgrounds and styles of transitions and animation).

5 Lyric Legacy

- ⇒ Guide students to one website and a report on one of their projects.
- ⇒ Read the article with the students. Use the “Good News Summary Organizer” to identify the main ideas in the story.
- ⇒ Have students write their own songs based on just the one story.

6 Picture Perfect

- ⇒ Read the challenge on Student Worksheet page 3 with students.
- ⇒ Demonstrate how to do an Image Web Search by using the key words “sustainable agriculture in Ethiopia”.
- ⇒ Model for students how to select images that celebrate the accomplishments of the people of Ethiopia, and to use language that celebrates progress and development.
- ⇒ Model how to create your captions that explain what the image is showing and how to make the language focus on the positive accomplishments of the people.
- ⇒ Discuss with students how to create a logical order for the images.
- ⇒ Teach students how to create a bibliography that acknowledges the sites from which they collected their images.
- ⇒ Select and demonstrate which tools you would like them to use from the PowerPoint Menus. Limit the number of tools according to the comfort level of the students with regard to the use of technology.

7 Diorama

- ⇒ Read the challenge with the students.
- ⇒ Discuss with students how the metaphor can be used to illustrate Ethiopia's struggle to achieve sustainable agriculture.
- ⇒ **ASK:** What are the lions that threaten Ethiopia in the story of the struggle for sustainable agriculture? Who are the spiders in this story? What might the webs represent?
- ⇒ Explain that a diorama is a 3 dimensional installation that is used as a form of illustration.
- ⇒ Brainstorm with students how they might create a diorama by using a shoe box or some type of container as a base on which to build a diorama. Discuss with students what other materials they might collect and use to enhance the diorama.
- ⇒ Discuss how labels and captions might be inserted to demonstrate points.
- ⇒ Assign the project to be done at home.
- ⇒ Have students present their projects to the class and explain what they demonstrate, and why they made the artistic decisions they did.

H Making A Difference For Others

- ⇒ Check with your administration if there are any guidelines you need to be aware of governing fundraising in the school, and gain approval in principle for working on a fundraising initiative.
- ⇒ Read the challenge with the students.
- ⇒ Have students discuss in a group of 3 to 5 students how they can help make a difference for others in the developing world.
- ⇒ Ask students to do a survey of non governmental organizations that are working in sustainable agriculture in Ethiopia. (They may already have collected some data if they completed the challenge entitled "Lyric Legacy".) Have students present their findings to

7 Diorama

Please note: for some students it may be difficult to develop the sustained metaphor which is at the heart of the challenge. The activity is not advised for these students unless it is developed with significant guidance.

- ⇒ Read the challenge with the students.
- ⇒ Discuss with students how the metaphor can be used to illustrate Ethiopia's struggle to achieve sustainable agriculture.
- ⇒ **ASK:** What are the lions that threaten Ethiopia in the story of the struggle for sustainable agriculture? Who are the spiders in this story? What might the webs represent? Scribe the responses in a 3 column chart in which together you identify the lions (the problems), the spiders (the Ethiopians who find solutions) and the web threads (the solutions).
- ⇒ Explain that a diorama is a 3 dimensional installation that is used as a form of illustration.
- ⇒ Brainstorm with students how they might create a diorama by using a shoe box or some type of container as a base on which to build a diorama. Discuss with students what other materials they might collect and use to enhance the diorama.
- ⇒ Ask students to bring a shoe box to school.
- ⇒ Provide students with materials such as yarn (for the threads of the spider's web), plasticene to build figures, construction paper, scissors, etc.
- ⇒ Discuss how labels and captions might be inserted to demonstrate points.
- ⇒ Provide students with class time to do the project.
- ⇒ Students might choose to work in pairs or small groups.
- ⇒ Have students present their project to the class and explain why they built it the way they did.

H Making A Difference For Others

- ⇒ Model for students how to do an Internet Search.
- ⇒ Help students ask the necessary questions when they are deciding on a project to support.

the class with their recommendation for a charity to support.

- ⇒ Through class discussion, select a charity they would like to support. To help them with their decision, have students look for evidence of collaborative decision making that includes the voices of Ethiopians, portraying a positive image of the people involved in the project, the stability of the project, how long the project has existed, how many people are helped through the project and any other criteria that might make doing the project an attractive venture.
- ⇒ Brainstorm fundraising activities that could be done by the class. Select an activity and make sure you have administrative approval.
- ⇒ Strike a subcommittee to work on organizational details.
- ⇒ Set a date, run the activity.
- ⇒ If possible, invite a representative of the organization to your school to receive a cheque.

F The Story Through The Data

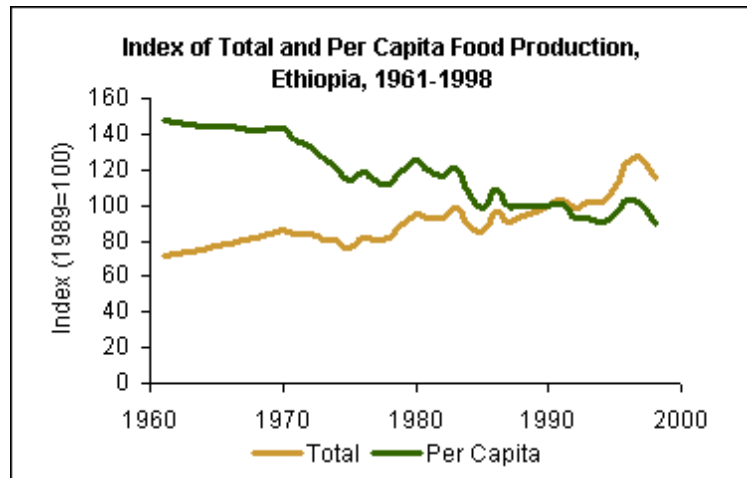
ANSWER KEY

Examine the three graphs from the *World Resources Institute, Earthtrends* page, and explain how they enhance your understanding of the importance of “sustainable agriculture” for Ethiopia.

Interpretation of Graph 1

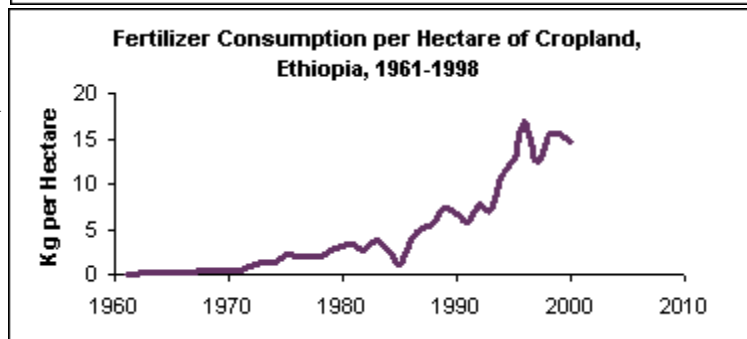
We can see that although more food has been produced overall between 1960 and the year 2000, people are individually less productive in producing the food. The graph leads us to ask questions such:

- ⇒ Why are people individually less productive? Are more people farming land which is becoming less productive? Does the graph illustrate an increase in the farming population without an increase in available farmland? Or are there simply fewer people involved in farming?
- ⇒ Could the graph demonstrate the results of drought, erosion and other factors that have caused a crisis in agriculture in Ethiopia? Does the graph suggest that farmers as a whole are poorer?



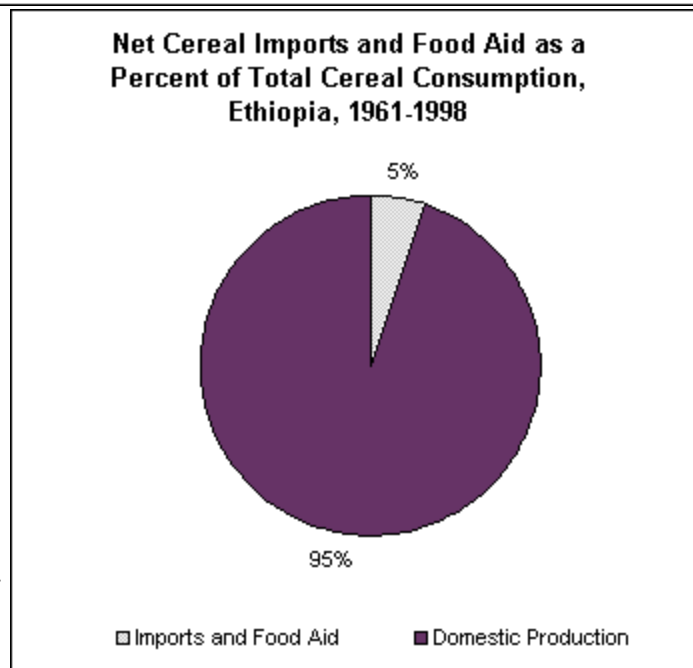
Interpretation of Graph 2

We can see that more fertilizer is being used than before. From the graph above, we can see that the overall production of food has increased. Combined with graph one we might ask if the increased use of fertilizer has contributed to the increased production of food. We might conclude that this strategy to improve sustainable agriculture is working.



Interpretation of Graph 3

This is a good news graph. While there may have been some years of extreme crisis, it is clear that the overwhelming majority of cereal grains consumed in Ethiopia is produced locally. There is hope that Ethiopia may attain self sufficiency.



What the three graphs suggest overall

The three graphs in combination suggest that progress has been made in agriculture, that Ethiopia is becoming more self sufficient, but the results for individual farmers are not clear from the graphs.

H Additional Teacher Resources

The following is a list of Resources and Ancillary activities that can be used to enhance this particular unit.

1. Study the effects of drought in Ethiopia on Health Care. Visit the **Carter Centre Website** at www.cartercenter.org and access the article, “**EPHTI Drought Response Project 2003**”. Have students read the *Country Profiles* pages from the **World Health Organization** on Ethiopia and Canada. Ask students to compare the statistics for Canada and Ethiopia and draw conclusions regarding standard of living.
2. Have students read **Greening Ethiopia for Self Sufficiency** from the website of the **Institute of Science in Society** (www.i-sis.org.uk/). See I-SIS press release 26/06/04 for an update on agricultural advances in Ethiopia and a report on the successful implementation of agricultural policies.
3. For an article on the cost of forest fires in Ethiopia, read the article, “**Forest fires in Ethiopia a problem with drought**” at www.uni-freiburg.de/.../iffn/country/et/et_1.htm
4. An excellent article for advanced readers is available from the **Food and Agriculture Organization (FAO)** of the United Nations: **Environment and Natural Resources Working Paper No. 17** (<http://www.fao.org/docrep/006/y5359e/y5359e00.HTM>): **Towards Sustainable Agriculture and Rural Development in the Ethiopian Highlands: Proceedings of the Technical Workshop on Improving the Natural Resources Base and Rural Well-being, 25 - 27 November 2003 Bahir Dar, Ethiopia**
5. Visit the website of the **Sustainable Tree Crops Program** at: <http://www.treecrops.org/>. Navigate to the *Country Activities* menu and click on *Ethiopia*. You will find interactive maps on Ethiopia featuring Coffee Production, Elevation, Temperature, Precipitation, Land Use, and Population Density. You will learn more about coffee production as well as the history of agricultural cooperatives.
6. From the CIDA homepage at <http://www.acdi-cida.gc.ca/index-e.htm> students can navigate to find current agricultural projects in Ethiopia.
7. For Lesson Plans tailored to Geography curricula, visit the **National Geographic Xpeditions** website to access related units with the following titles:
 - a) **Drought, Famine and Geographic Diversity**
<http://www.nationalgeographic.com/xpeditions/lessons/03/g68/morelldrought.html>
 - b) **The Nile in Crisis**
<http://www.nationalgeographic.com/xpeditions/lessons/03/g912/morellcrisis.html>
 - c) **Climographs: Temperature, Precipitation and the Human Condition**
<http://www.nationalgeographic.com/xpeditions/lessons/15/g912/pgafrika4.html>
 - d) **Sustainable Development and Africa’s Wildlife Reserves**
<http://www.nationalgeographic.com/xpeditions/lessons/16/g912/sustdevafrica.html>
 - e) **Addressing World Hunger**
<http://www.nationalgeographic.com/xpeditions/lessons/18/g68/tghunger.html>
 - f) **A Geographic Perspective on Africa**
<http://www.nationalgeographic.com/xpeditions/lessons/18/g912/gpafrika4.html>
8. **Xpeditions Atlas**: <http://www.nationalgeographic.com/xpeditions/atlas/index>.

Photos and Visual Images

The following sites have some excellent photo galleries with images of Ethiopia and/or the Horn of Africa in general as well as pictures that demonstrate sustainable agriculture:

1. Article: **Land rehabilitation in Ethiopia Improves Food Security** with Photo essay at All Africa.com: <http://fr.allafrica.com/photoessay/susdev/> (photo essay actually starts at: <http://fr.allafrica.com/photoessay/susdev/photo1.html>)
2. **World Health Organization**: Go to <http://www.who.int/en/>. Navigate to the **Mediacentre**: type in “**Ethiopia Photo Gallery main page**” into the Search Window.

3. Child Alert: Crisis in the Horn of Africa (UNICEF) - **Child Pastoralists: the effect of drought on pastoralists**, a narrated Photo Essay at <http://www.unicef.org/childalert/hornofafrica/essay.php>
4. **A Glimmer of Hope Foundation**: Navigate to their page on Ethiopia from their home page at <http://www.aglimmerofhope.org/> Many visual images are included in the site.
5. Website: **African Voices** from the **Smithsonian Institute**: an extremely rich site with many visuals, interactive displays and voice explanations at <http://www.mnh.si.edu/africanvoices/>. The Smithsonian also has an educational website with model lesson plans, a quicktime 60 minute tour of the museum, a photo gallery, and suggested activities at: <http://www.mnh.si.edu/africanvoices/>.
6. At <http://www.epa.gov/climatechange/kids/> you will find The United States Environment Protection Agency's website for kids: **Climate Change Kids Site**.
7. The **Perry-Castaneda Library Map Collection** of the **University of Texas** has an outstanding collection of maps of Africa at <http://www.lib.utexas.edu/maps/africa.html>.