BRITANNICA GLOBAL GEOGRAPHY SYSTEM

Overview

BGGS Overview

BGGS is the ***Britannica Global Geography System,*** a modular electronic learning system which combines the latest pedagogical approach to geography learning with interactive multi-media materials enabling students and teachers to immerse themselves in exciting geographic investigations. BGGS is made up of the following components:

- *Geographic Inquiry into Global Issues* (GIGI) Student DataBooks
- Teacher's Guides with Overhead Transparencies in a three-ring binder
- Laminated Mini-Atlases to accompany each module
- BGGS CD-ROM with User's Manual
- 3 BGGS Videodiscs with Barcode Guides
- 3 thematic posters

This section of your Teacher's Guide will examine each component and demonstrate how the components work together to facilitate some very exciting geography learning for you and your students!

I. GIGI

Geographic Inquiry into Global Issues (GIGI) is the foundation of the BGGS. GIGI is a series of modules developed at the Center for Geographic Education at the University of Colorado at Boulder. The modules are independent of one another and can be presented in any order.

They use an inquiry approach and are organized around ten world regions:

South Asia
Southeast Asia
Japan
Former Soviet Union
East Asia
Australia/New Zealand/Pacific
North Africa/Southwest Asia
Africa-South of the Sahara
Latin America
Europe

Each GIGI module is centered around a particular question, such as "Why are people in the world hungry?" and "Is freedom of movement a basic human right?" The lead question is explored in one region of the world, then, in most modules, in a second region, before being investigated in North America.

The modules can be used in geography classes, or selected modules can be used in other courses, such as Earth Science, Global Studies, or Economics. Twelve modules constitute ample material for a full year's geography course. Each module is accompanied by sets of laminated mini-atlases which students can write on with dry-erase markers (provided by the teacher), then wipe clean to be re-used by the next class. This activity works well with cooperative groups of students.

Each module comprises a Teacher's Guide in a three-ring binder which includes Handouts and Activity masters for duplication and Overhead Transparencies; twenty-five Student DataBooks (additional Student DataBooks available) and the Mini-Atlases all packaged in a sturdy box suitable for storage when the class moves on to the next module. Since the Student DataBooks are soft-covered three-hole punched, non-consumable books, we recommend that each student have a binder to protect them. BGGS binders are available from Britannica, or you might ask each student to obtain one at the beginning of the course to keep the books in good condition for the next group of students that will use them. As the class completes a module, you can collect the Student DataBooks, place them in their storage box, and distribute the next module's DataBook to be placed in the student's binder.

GIGI print materials are organized in a unique fashion. The Teacher's Guide explains procedures to use in presenting the material found in the GIGI Student DataBook. Miniature layouts of student pages show the teacher how many pages of student material correspond with a given Teacher's Guide page. The Teacher's Guide includes Activities and Handouts to be copied and passed out to the class and Overhead Transparencies to enhance each lesson. All of a module's Activities, Handouts, and Overheads are located behind the third tab divider in each Teacher's Guide.

The teacher needs to become familiar in advance with both Teacher and Student material in order to effectively engage the class in meaningful geographic inquiries. There is a comprehensive "Memo to the Teacher from the GIGI Staff" in each Teacher's Guide which explains in detail the goals and principles behind the inquiry approach to geography learning.

The electronic components of the ***Britannica Global Geography System*** further empower students and teachers alike to engage in meaningful investigations. They are explained in detail in the following section.

II. BGGS CD-ROM

The **BGGS CD-ROM** is a resource manager and reference tool designed to help both teachers and students get maximum impact from the ***Britannica Global Geography System.*** This CD-ROM contains the text of the GIGI Student DataBooks in both Spanish and English, as well as Britannica's innovative geography reference program Geopedia™ all on a single disk. Here are some of the ways you and your class can use this software:

- When preparing to teach a module, you can access the GIGI Student DataBook on the CD to find which other elements of the BGGS are keyed to that lesson. For example, if you are teaching Lesson 3 in the Population and Resources module (What is overpopulation and how is it distributed?), accessing that lesson on the CD-ROM will reveal that there is one clip on the *Economic Development* videodisc called "Population/Wealth Correlation." With this information, you can plan when to reserve your department's videodisc player to preview the clip and show it to your class.

Furthermore, you will discover that there is one GIGI mini-atlas activity related to this lesson, five articles in the Geopedia database, ten entries in

Geopedia's World Data, five maps in the Geopedia Atlas, and five learning activities in the Geopedia BrainTeasers. You may want to assign each student or small group of students a research project using these extra resources to be done over the course of the module, or you can create a set of questions which the students must complete using the information found in Geopedia.

These activities can serve as a performance-based assessment of what students have learned in studying each module.

Since many schools have a limited number of computers with CD-ROM drives available, you may wish to devise a rotating schedule or sign-up system to ensure that each student has a chance to get at the BGGS CD-ROM. If it takes 15 class periods for a class of twenty-five students to do one module, students working in pairs can each have one turn at the computer if they schedule their time at the outset of the module. Using the CD-ROM's resource managing capability, you will have a very good sense of what resources you have at your disposal and how to make the most of them.

- All GIGI lessons are indexed by word and by key topic. If your class is studying food shortages in the Hunger module, you can key in the word hunger, and immediately learn where else in the GIGI modules this word or key topic appears. You can go directly to those occurrences in the text. You will also be directed to appropriate Geopedia references and Brain Teaser activities. Figures, Maps and Tables from GIGI print modules do not appear in the CD-ROM. However, the caption describing each of them is part of the online text.
- If Spanish is the primary language of your students, GIGI lessons can be accessed and printed out in Spanish from the BGGS CD-ROM. The BGGS Videodiscs have a Spanish soundtrack as well.

III. BGGS Videodiscs

More than ever before, today's students are visual learners. The GIGI modules explore issues and regions of the world with which many students are unfamiliar. With this in mind, we have produced three videodiscs, one to correspond to each of three major strands we have identified in GIGI: *Earth's Environment and Society; Economic Development;* and *Global Political and Cultural Change.*

These videodiscs, with English and Spanish soundtracks, can take you and your class to the parts of the world you are investigating with the wave of a barcode wand. Your class will hear how Amazon native peoples feel about the exploitation of the tropical rain forests where they live, witness the eruption of a volcano, and see first-hand the environmental disasters human beings have brought about.

The Barcode Guide which accompanies each disc enables you to access with a light pen or barcode reader, segments which pertain to the lesson being investigated. The Guide includes barcodes in both English and Spanish. Teachers can use the segments to enrich lessons, and students can make use of segments to enhance a report or group presentation.

There is a full-color poster to accompany each videodisc cluster which engages the students by asking "How do these images connect to you?" The posters can provide a colorful springboard for classroom discussion.

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BRITANNICA GLOBAL GEOGRAPHY SYSTEM

GIGI

Geographic Inquiry into Global Issues

Hunger

Program Developers
A. David Hill, James M. Dunn, and Phil Klein

TEACHER'S GUIDE

Regional Case Study
North Africa/Southwest Asia

Britannica
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Contents

Memo to the Teacher from the GIGI Staff

You have in your hands the GIGI Teacher's Guide. Teaching with GIGI is a departure from teaching with a conventional textbook. By taking the time to study this memo—about 30 minutes—you will gain a good understanding of the kind of teaching that's needed to be successful with GIGI. We hope you have a rewarding and enjoyable experience!

Goals

The three major goals of *Geographic Inquiry into Global Issues* (GIGI) are to help you teach your students the following:

1. Responsible citizenship
2. Geographic knowledge, skills, and perspectives
3. Critical and reflective thinking

We believe you can accomplish these goals as well as others by teaching real-world issues. GIGI presents these issues with an inquiry approach, using the information, concepts, skills, and perspectives of geography.

GIGI and the Britannica Global Geography System

GIGI offers you two instructional modules for each of ten world regions (Figure 1 on pages vi and vii). There is no necessary sequence of modules; each one is independent, so you can use them in any order you wish or put together smaller clusters of modules to fit your needs. A leading question frames the issue of each module, and student inquiry proceeds through a sequence of lessons, each of which requires one or more daily periods of class time.

Color photographs at the beginning and end of each Student DataBook graphically illustrate the topic under inquiry.

Modules typically begin with a broad introduction to the global issue. Then, a major case study of three to four lessons examines the issue in a real place within the selected world region. Students also explore, usually in a single lesson, a comparative case study in a *different* region, which gives a variant of the issue and a sense of its global nature. Modules also bring the students "back home" to focus on the issue as it may appear in the United States or Canada. We do this because although North America is not one of the 10 GIGI

regions, frequent comparisons to North America throughout each module achieve additional instruction on this "home region."

Each GIGI module requires from two to three weeks of teaching time (10 to 15 class periods of 50 minutes) and contains a Student DataBook, Teacher's Guide, and Mini-Atlas. These GIGI print materials are at the heart of the Britannica Global Geography System (BGGS), which extends and enhances the inquiry approach to real-world issues with a CD-ROM and three videodiscs.

The BGGS CD-ROM puts the text of the GIGI Student DataBooks on line in both English and Spanish, then enables both teacher and students to search the text by lesson, key topic, or word to find the resources in the system that will enhance each. Geopedia™, Britannica's multimedia geography program, is provided in the CD-ROM for follow-up research. It features an atlas with more than 1,000 new maps, an encyclopedia with more than 1,200 geography-related articles, statistical information on every country from Britannica World Data Annual, a chartmaker for creating charts and graphs, a selection of video clips exploring cities and regions, and an electronic notepad allowing teachers and students to clip and edit text right on the screen.

Three videodiscs, designed to electronically transport students to the regions of the world where GIGI case studies are focused, are another part of the BGGS. The discs emphasize three major strands of the GIGI investigations: *Earth's Environment and Society, Economic Development,* and *Global Political and Cultural Change.* Each videodisc has two soundtracks, English and Spanish, and is accompanied by a Barcode Guide that enables teachers and students to access the segments that accompany the GIGI lesson with a wave of the barcode reader. A poster accompanies each videodisc to reinforce the connnections between your students and the issue being studied.

A full explanation of the Britannica Global Geography System components and how they work together is located in the BGGS overview in the front section of this Teacher's Guide.

Geographic Inquiry into Global Issues (GIGI)

Issues, Leading Questions, and Case Study Locations

South Asia	**Population and Resources** *How does population growth affect resource availability?* Bangladesh (Haiti)	**Religious Conflict*** *Where do religious differences contribute to conflict?* Kashmir (Northern Ireland)
Southeast Asia	**Sustainable Agriculture** *How can the world achieve sustainable agriculture?* Malaysia (Cameroon, Western United States)	**Human Rights** *How is freedom of movement a basic human right?* Cambodia (Cuba, United States)
Japan	**Global Economy*** *How does trade shape the global economy?* Japan (Colombia, United States)	**Natural Hazards** *Why do the effects of natural hazards vary from place to place?* Japan (Bangladesh, United States)
Former Soviet Union	**Diversity and Nationalism*** *How do nations cope with cultural diversity?* Commonwealth of Independent States (Brazil, United States)	**Environmental Pollution** *What are the effects of severe environmental pollution?* Aral Sea (Madagascar, United States)
East Asia	**Population Growth*** *How is population growth to be managed?* China (United States)	**Political Change** *How does political change affect peoples and places?* Hong Kong (South Korea, Taiwan, Singapore, Canada)

* Under development

Figure 1 Matrix showing GIGI modules. Geographic issues are in bold and leading questions are in italics. Major case study locations are followed by comparison examples in parentheses.

Geographic Inquiry into Global Issues (GIGI)

Issues, Leading Questions, and Case Study Locations

Australia/ New Zealand/ Pacific	**Global Climate Change** *What could happen if global warming occurs?* Australia and New Zealand (Developing Countries, U.S. Gulf Coast)	**Interdependence*** *What are the causes and effects of global interdependence?* Australia (Falkland Islands, United States)
North Africa/ Southwest Asia	**Oil and Society*** *How have oil riches changed nations?* Saudi Arabia (Venezuela, Alaska)	**Hunger** *Why are people hungry?* Sudan (India, Canada)
Africa—south of the Sahara	**Building New Nations*** *How are nation-states built?* Nigeria (South Africa, Canada)	**Infant and Child Mortality** *Why do so many children suffer from poor health?* Central Africa (United States)
Latin America	**Urban Growth** *What are the causes and effects of rapid urbanization and urban growth?* Mexico (United States)	**Development** *How does development affect peoples and places?* Amazonia (Eastern Europe, U.S. Tennessee Valley)
Europe	**Regional Integration*** *What are the advantages of and barriers to regional integration?* Europe (United States, Mexico, Canada)	**Waste Management** *Why is waste management both a local and global concern?* Western Europe (Japan, United States)

* Under development

Figure 1 (continued)

The **Student DataBook** contains the following features:

- Memo to the Student from the GIGI Staff
- An overview of the key questions and places explored in the module
- Lesson objectives
- Data presented in a variety of forms, including text, maps, graphs, tables, photographs, and cartoons
- Questions
- Glossary
- References

Students are not expected to learn the GIGI curriculum through the Student DataBook alone. Rather, they derive meaning from the DataBook when you use the Teacher's Guide to work through the curriculum with them. You may want to explain this process to students. Point out that you will be directing them to carry out various activities that are not specified in their text but are important in the sequence of learning.

Prior to teaching the first lesson, be sure students read the "Memo to the Student from the GIGI Staff" and the two-page overview, which gives the module's objectives in question form. Point out the Glossary and encourage its use as you work through the module, noting that glossary words are listed at the beginning of each lesson. So that students will know what they are expected to learn, they need to read carefully and understand the objectives listed at the beginning of each lesson.

This **Teacher's Guide** contains the following sections:

- Preparing to Teach This Module, a synopsis of the module's leading question, themes, and activities
- Module Objectives
- Number of Days Required to Teach the Module
- Suggestions for Teacher Reading
- Extension Activities and Resources

Most lessons include the following sections:

- Time Required
- Materials Needed
- Glossary Words
- Getting Started (suggested anticipatory sets)
- Procedures (for group and individual work)
- Modifications for older or younger students (in a different type face, printed in color)
- Questions and Answers (shown in tinted boxes)
- For Further Inquiry (suggestions for extensions and/or assessments)

- Masters of Overhead Transparencies and Activity masters and keys (located at the back of the Teacher's Guide)

Each module has its own accompanying **Mini-Atlas,** which provides four-color maps designed especially for use with that module. The Teacher's Guide explains how to use these maps. No additional atlases are required to teach the module, but large wall maps are highly recommended for your classroom. In addition to the maps in the Mini-Atlas, you will find numerous maps in the Student DataBook.

Intended Grade Levels

We believe GIGI enables you to probe global issues in various degrees of depth. This allows for the modules' use both over several grade levels (7–12) and over varying lengths of time at a grade level. The Teacher's Guides suggest alternatives for modifying instruction for different grade levels where appropriate. The reading level varies within each module: The Student DataBooks are approximately at grade 9 level, but some extracts from other sources are more challenging. These extracts are important because they show students that many people have contributed to the data, but younger students may need more time and help to understand them. The Teacher's Guides also include extension activities and resources that can maximize the grade-level flexibility of each module. Using the visuals included in the BGGS videodiscs and the activities built into the CD-ROM, you can further tailor instruction to your students. Obviously, you will determine whether particular lessons suit your students' abilities. When a range of required teaching time is given for a module, for example, 10 to 12 days, the greater amount of time should be planned for younger students. If you believe a lesson might be too difficult for your students, eliminate or simplify it. Rarely will the elimination of a lesson render a module ineffective. On the other hand, try to utilize the suggested extensions if the lesson does not adequately challenge your students.

Issues-Based Geographic Inquiry

In order to foster active learning and higher-level thinking, GIGI stresses issues-based geographic inquiry. Inquiry is essentially the method of science and of good detective work: It poses questions and proposes answers about the real world and it tests its answers with real data. Students do this with GIGI. Because this approach may be different from what students are familiar with, you may wish to pre-

pare them by describing the process and its connection to the real world. Also, their reading and discussion of the "Memo to the Student from the GIGI Staff" will help them understand the inquiry approach. GIGI is based on Frances Slater's inquiry activity planning model (1993). To reach GIGI's goals, your students study specific global issues by pursuing answers to geographic questions (Figure 2). They answer these questions by analyzing and evaluating data, using geographic methods and skills. This "doing geography" approach leads to significant outcomes in knowledge, skills, and perspectives. The progression from questions to generalizations "is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Meaning and understanding define the process of tying little factual knots of information into bigger general knots so that geography begins to make sense, not as a heap of isolated facts but as a network of *ideas and procedures*" (Slater 1993, page 60).

In truly free inquiry, students work independently, but with GIGI posing questions and providing data, you and your students explore the issues together. This approach supports and encourages your students in learning geography.

By using issues-based inquiry, you promote the development of a critical perspective in your students. They learn the habits of critical and reflective thinking. Multiple and opposing positions are inherent

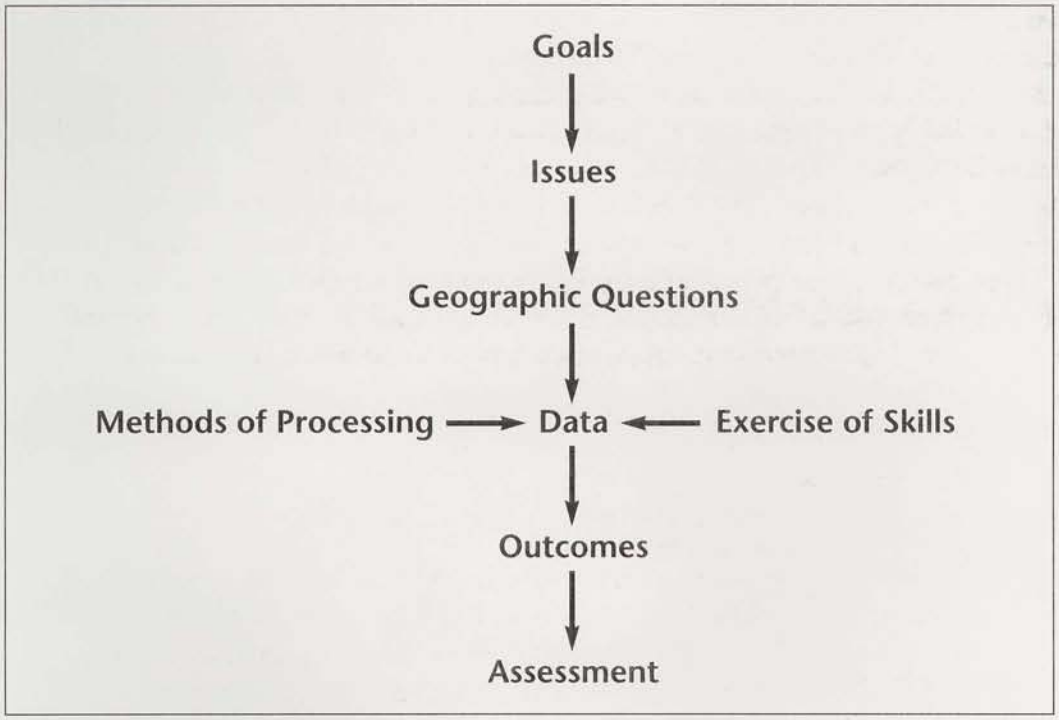

Figure 2 GIGI's model for issues-based geographic inquiry (after Slater 1993).

in these issues. Facts can be used to support different points of view. This is the context in which the habits of the critical perspective can develop, and *interpretation* is the key activity. With GIGI you foster these habits and abilities as you help your students interpret data guided by hypotheses, propositions, arguments, or questions.

An essential element of data-based, issues-oriented inquiry is to challenge your students by giving them opportunities to

- raise new questions,
- question the quality of the data,
- seek more useful or current data,
- articulate relationships they perceive,
- explain their processes of investigation, and
- defend their positions, decisions, and solutions.

Why These Issues Were Chosen

In planning GIGI, we sought timeless issues that are truly global in scope and that are of special concern to geographers. In this way, GIGI fosters what the National Geography Standards calls "the geographically informed person" needed by modern global citizenry (Geography Education Standards Project 1994).

The major case study, chosen to give solid grounding to the issue, is focused on a region where the issue is clearly expressed. The secondary case studies, based in other regions including the United States and Canada, show the *global* scope of the issue.

It is important to stress that, although GIGI contains a wide selection of case studies in all major regions (Figure 1) as well as frequent references to the global distribution of many geographic phenomena, GIGI is not a traditional regional geography. It does not attempt to provide basic geographic information for each region, such as one finds in traditional regional geography textbooks. In teaching a GIGI module, it is important to keep the emphasis on the issue and not get distracted with extraneous regional information.

Role of Questions

Each GIGI module is divided into six to eight lessons, each titled by a question; subquestions head individual sections of the lessons. Questions guide inquiry in order to merge the process of investigation with the drawing of conclusions. Directly linking questions and answers helps achieve an intellectually satisfying understanding of a problem (Slater 1993). When students are asked to learn only conclusions without learning how they are drawn, we perpetuate the tradition of an answer-centered education bereft of higher-level thinking. Therefore, it is important that students understand they are not

always expected to answer the questions when they first appear, but rather to keep them in mind as guides when they are reading or discussing.

GIGI asks both convergent and divergent questions, trying to reach a balance between the two. Supplement the questions in GIGI by asking your students many more of the types of questions suggested by Slater (1993). These are questions that encourage

- recall,
- classification and ordering,
- the use of data to draw conclusions,
- awareness of the limitations of data or of evaluation of data, and
- awareness of the processes of reasoning used.

According to the National Geography Standards, the "geographically informed person applies a comprehensive spatial view of the world to life situations" (Geography Education Standards Project 1994). In order to foster such a view of the world, GIGI asks *geographic* questions that ask where things are and why. By asking such geographic questions and by having students learn to ask them, you will reinforce GIGI's approach. A good question to begin with is: Where is this issue located? Then proceed to questions such as the following:

- Why does it take place there?
- How and why does this issue affect the people in this place?
- In what other places do people confront this issue?
- How and why are these places related?
- What alternatives do people have to improve their situation, and which alternatives do you recommend?

Fundamental Themes of Geography

In recent years, many geography teachers have learned that the five "fundamental themes" (Joint Committee on Geographic Education 1984) help them ask geographic questions. The theme of **Location** asks where things are and why things are located where they are. **Place** is the theme that inquires into human and physical characteristics of locations. **Human-Environment Interaction** examines how and why humans both adapt to and modify their environments as well as the consequences of these actions. **Movement** investigates not only how and why places are connected but also what is the significance of those interactions. The theme of **Region** seeks to identify and explain similarities and differences among areas and how and why these form and change. An extended explanation of the themes and their concepts, interrelationships, and applications is

given in Hill and McCormick (1989). The themes are useful because they encourage the kinds of questions required to help students develop the geographic perspective.

Importance of Local Examples

GIGI is a world geography, but it shows that issues work at various geographic scales—personal, local, regional, national, and global. Because it is sometimes difficult for younger students to identify with faraway places, success with GIGI in part depends upon the ability of both you and your students to relate the issues to examples in your local community. We strongly recommend that you refer in class to local examples of the issue being investigated. Just as important, we encourage you to have your students conduct local field studies related to this issue whenever possible. Issues having important geographic dimensions abound in every community (see the Extension Activities and Resources section at the end of this Teacher's Guide for examples). Peak educational experiences often come when students see things in the field that relate to their classroom studies. We discuss other reasons for local involvement in the next section.

Familiar people can be as important as familiar places in motivating students. The quality of personal engagement is at the crux of successful instruction. Using the BGGS videodisc segments that accompany most GIGI lessons is a powerful way to help your students find relevance by identifying the GIGI issues with real people. Similarly, you can connect GIGI issues to everyday life at a human scale, especially at the students' own age levels, by using current newspaper accounts or magazines that address the student's perspective.

As you gain familiarity with teaching local examples, as you develop field exercises for your students, and as you learn how to put a human face on these materials, you will begin to customize the GIGI modules to fit your particular environment. Our trial teachers reported that the more they taught GIGI modules, the more comfortable they became in adapting them to fit their needs.

Fostering Optimistic and Constructive Perspectives

The seriousness and complexity of the global issues studied in GIGI can overwhelm students unless you take care to foster optimistic and constructive perspectives toward issues. "Gloom and doom" needs to be balanced with examples of success and prospects for positive change. It is important to help your students develop a

sense of personal efficacy, an attitude that their actions can make a difference in solving global problems. The maxim, "Think Globally, Act Locally," speaks to the need to help students organize and conduct constructive actions that address local variants of the issues they are studying. As we noted earlier, student involvement in local projects enriches their educational experience. There is also good evidence that it actually produces an optimistic feeling—that their actions *can* make a difference—to help them deal with the often difficult and sometimes depressing world issues. GIGI modules often include lessons and activities to show possibilities for positive action.

Certain perspectives foster student optimism and constructive behavior. Geography students, especially, should learn to respect other peoples and lands, and they should come to cherish environmental unity and natural diversity. They should also learn to be skeptical about simplistic explanations, such as the theory that attempts to explain human characteristics and actions in terms of the physical environment alone, which geographers call "environmental determinism." Most important, optimistic and constructive perspectives accompany the development of empathy, tolerance, and open-mindedness. These traits are fostered by avoiding sexist and racist language, discouraging ethnocentricity, and challenging stereotypes, simplistic solutions, and basic assumptions.

References to Data

Unlike most textbooks, GIGI attributes its sources of data with in-text citations and full reference lists, which is another way of encouraging the critical perspective. In the Student DataBook, material that has been extracted from original sources is indented and printed in a different typeface. Long extracts are highlighted with background color. Use of these sources helps your students learn that real people construct ideas and data and that their concepts and information are not immutable. Instead, they often change through the critiques and interpretations of various people. By using these scholarly conventions, we intend to encourage your students to appreciate the tentativeness of knowledge and to value scholarship and academic integrity.

Updating

Real data quickly become obsolete. GIGI addresses this fact by discussing historical trends of data and by stressing concepts. You should reinforce this bias for concepts and also freely acknowledge the datedness of information by explaining why it is still used (for example, the lags between research and writing and publication and

use; the lack of more recent data). Whenever possible, guide students to update materials. Britannica's Geopedia, on the BGGS CD-ROM, contains data based on Encyclopædia Britannica's World Data Annual, which is also available in print form. Have students use these sources to supplement and update GIGI data.

Assessing Learning

Evaluation of student achievements with GIGI can be focused on two broad areas. The first is the developing ability of students to undertake geographic inquiry. The second is the acquisition of knowledge and perspectives about the module issue.

The ability of students to undertake inquiry in geography can be related to the primary questions that guide geographical study. They are noted earlier in this memo. As students work through the module, they are likely to become increasingly adept at asking and answering geographic questions. Seek to extend your students' competence in several clusters of skills that facilitate geographic inquiry. These clusters include the following:

- Identifying problems and issues. This may be done through observation, asking questions, brainstorming, reading, and in other ways.
- Inquiring into the problems and issues in many ways such as through map reading and interpretation, making surveys, and using results of surveys done by others.
- Making decisions and taking action, for example, through reviewing alternatives, establishing priorities and criteria, and communicating cooperatively with people in other ways.
- Reflecting at all stages of the process of inquiry, especially through careful consideration of diverse sources of evidence.

Students will acquire knowledge of the module issue as they make their inquiries. This knowledge can be tested and graded. Assessments may be based on the following:

- Knowledge and skills shown by work on Activities included in this Teacher's Guide and on questions in the Student DataBook.
- Observations of student participation in groups and in class discussions.

Specific assessment ideas are given at the end of some lessons in the section called For Further Inquiry. In addition, the Teacher's Guide ends with Extension Activities and Resources. Some of these extension activities can serve as authentic assessments.

Potential Uses

In addition to the flexibility offered by the free-standing nature of the modules, GIGI has a number of other characteristics that encourage widespread use. Modules can be extended and enhanced with the BGGS CD-ROM, videodiscs, and posters. Because GIGI's issues-based approach integrates several topics (for example, population, economic, political, physical, and cultural geography) in a single module, the modules are not conducive to using an approach in which topics are taught separately. On the other hand, GIGI may be used with a world regional approach because there are modules for each of 10 world regions. A year-long world geography or global studies course will have more than enough material by using 12 modules. Five to seven modules may constitute a one-semester, issues-based geography course covering several regions. You can define clusters of modules for your own curricular purposes. We have identified three clusters for interdisciplinary studies within the Britannica Global Geography System, each comprising six or seven GIGI modules. They are *Earth's Environment and Society, Economic Development,* and *Global Political and Cultural Change.* BGGS includes a videodisc and poster for each cluster. These strand packages could well be used in Social and Environmental Studies, Earth Science, Global Studies, and Area Studies classes. Activities in the modules also support math, language arts, and arts curricula.

GIGI encourages and facilitates the development of a variety of geographic skills that transfer widely into the natural and social sciences. Among these are skills of asking geographic questions and developing and testing geographic generalizations. These require other GIGI skills including examining and making a variety of maps; analyzing photographs; constructing and interpreting graphs and tables of spatial data; and collecting, interpreting, and presenting geographic information.

Finally, GIGI promotes a wide variety of linguistic, numeric, oral, creative, and social skills as well as geographic skills. In particular, GIGI emphasizes cooperative learning. We believe that one of the great strengths of the GIGI modules is that they give students practice in both group and individual problem solving. As students become more familiar with the global issues, they learn that finding solutions to world problems requires people to work together cooperatively.

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Joint Committee on Geographic Education. 1984. *Guidelines for Geographic Education: Elementary and Secondary Schools.* Washington, DC: Association of American Geographers and National Council for Geographic Education.

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Preparing to Teach This Module

Hunger

Why are people hungry?

This module introduces students to the issue of world hunger. They may be surprised to learn that hunger exists in all world regions, although it is more likely to occur in some regions than others. The consequences of hunger vary from temporary and mild effects to extreme dysfunction and death. Students may assume that hunger is something that is beyond anyone's control. This module attempts to show them what can be done to address this tragedy. As students explore the module's case studies in Sudan, Canada, and India, they will see that hunger can be explained through the tools used by geographers. There is no single solution to global hunger; rather, solutions are unique to regions and to the scale of the problem. Understanding world hunger is important to include in the curriculum because it increases students' compassion for less fortunate people, and it gives them avenues to help alleviate the problem as a part of their world citizenship.

Hunger is a condition that exists when people do not get enough food or enough of the right kinds of foods to meet the body's needs. The results of hunger are very severe for children, who often suffer permanent damage to vital functions. Geographers ask where hunger exists, and they explore the reasons unique to each setting. Hungry people in marginal agricultural areas face different obstacles than urban dwellers in modern cities. Sadly, in most places in the world, food is available, yet it remains beyond the reach of hungry people. Geographers also ask what can be done to eliminate world hunger.

In the first lesson, students read about hunger from the perspective of a Sudanese teenager. This opens a broader question of how much food a person needs and permits students to speculate on why hunger exists. In Lesson 2, students explore how drought contributes to hunger in the Sudan, and Lesson 3 inquires into the political and economic reasons for hunger there. Lesson 4 introduces the concept

of food security and explores strategies for attaining it in Sudan.

Lesson 5, the first comparison case study, takes students to Canada, a wealthy developed country. Yet, as in the United States, some Canadians have trouble affording adequate nutrition. The next lesson returns to a less-developed country. Many Indians do not get enough food due to discrimination based on age and gender, a social problem that students may note is not confined to South Asia.

The final lesson introduces a geographic way to look at and help alleviate hunger. Students use information and insights gained throughout the module in this analysis.

Using the BGGS CD-ROM can simplify lesson planning by making it easy to access the resources the system provides for each lesson. It shows exactly which Geopedia™ data and learning activities can be used in long-range and short-term assignments, and which videodisc clips will provide visual reinforcement for each GIGI lesson. The CD-ROM can also show you ways in which a lesson in one module relates to a lesson in another module. And it indicates where to find every reference in GIGI, Geopedia™, the Mini-Atlas maps, and the videodiscs to any key topic—for example, "tsunami" or "Bangladesh." The students will also be able to use the BGGS CD-ROM for further research and short-term or long-term range assignments. The BGGS multimedia components and their uses are explained fully in the tabbed BGGS section in the front of this Teacher's Guide.

The following are general modifications recommended for younger students:

- Plan for fifteen days because the activities will require more teacher explanation and support.
- Provide directions for homework assignments and monitor students' understanding and progress.
- Prior to assigning written activities requiring students to draw conclusions and summarize their findings, ask guiding questions and develop a sample outline on the chalkboard.

Module Objectives

- Identify human food needs and describe the consequences for people who cannot meet these needs.
- Investigate why hunger exists in all regions of the world, rich and poor.
- Understand how changing environmental conditions can affect the amount of food produced.
- Explain the economic and political obstacles that can prevent people from getting enough food.

- Recognize that the problem of world hunger can be understood at three different scales of analysis.
- Explore ideas to help reduce world hunger in a broad range of settings.

Number of Days Required to Teach *Hunger*

Twelve or thirteen 50-minute class periods

Suggestions for Teacher Reading

Brown, J. Larry. 1987. *Living Hungry in America.* New York: Macmillan.

Etienne, G. 1988. *Food and Poverty: India's Half Won Battle.* Beverly Hills: Sage Publications.

Grigg, David. 1985. *The World Food Problem 1950–1980.* New York: Basil Blackwell, Ltd.

Maney, Ardith L. 1989. *Still Hungry After All These Years: Food Assistance Policy from Kennedy to Reagan.* New York: Greenwood Press.

Mortimore, Michael. 1989. *Adapting to Drought: Farmers, Famines, and Desertification in West Africa.* Cambridge: Cambridge University Press.

Muthiah, S., editor. 1987. *A Social and Economic Atlas of India.* New York: Oxford University Press.

Naipaul, V. S. 1977. *India: A Wounded Civilization.* New York: Knopf.

O'Connor, Anthony. 1991. *Poverty in Africa: A Geographical Perspective.* New York: Columbia University Press.

Physician Task Force on Hunger in America. 1985. *Hunger in America.* Middletown, CT: Wesleyan University Press.

Roden, David. 1974. Regional inequality and rebellion in the Sudan. *The Geographical Review,* 64 (4): 498–516.

Voll, John Obert, and Voll, Sarah Potts. 1985. *The Sudan: Unity and Diversity in a Multicultural State.* Boulder, CO: Westview Press.

Lesson 1

Why is Angelo Chol hungry?

Time Required

Two 50-minute class periods

Materials Needed

Transparency of Overhead 1
Copies of Activity 1 for each group of students
Booklet with caloric values of common foods
Mini-Atlas maps 1 and 2

Glossary Words

calorie

gross national product (GNP)

starvation

Optional Activity Before Beginning the Module

To dramatically illustrate the way most people in the world eat, you may wish to enlist the help of parents or community organizations in arranging a "Hunger Banquet" experience for your class. In a Hunger Banquet, people are divided into three groups, one representing the developed world and the other two representing the developing world. People in the first group are treated to a full, sumptuous meal, including dessert. People in the other two groups eat only rice and beans (representing the diets of people in better-off developing countries, such as Mexico) or rice only (symbolizing what people in the poorest countries have to eat each day). The concept of the Hunger Banquet was developed by Oxfam, the international food relief organization.

Divide the class into the three groups as follows. Randomly select about 10 percent of students to represent the developed countries. Seat this group at a table and serve them the full meal. Divide the remaining students into the groups representing the developing world so that two-thirds get rice only and one-third has rice and beans. Seat the two developing-world groups on the floor, making sure the developed-world group can see what their neighbors are eating.

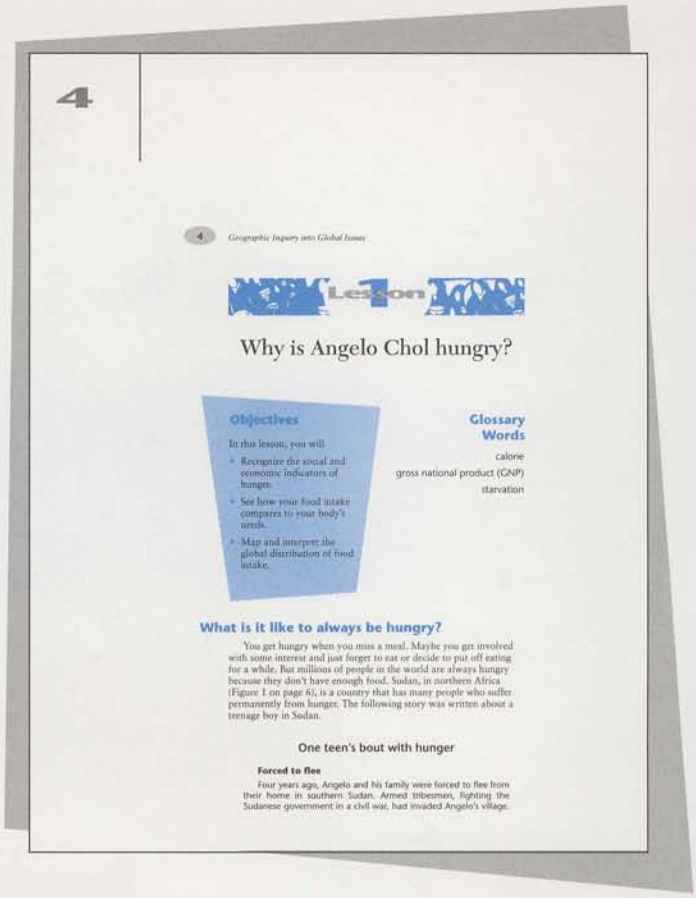
The percentages of each group reflect the approximate percentage of humans who eat very well each day (10 percent of the class, eating a full meal); those who eat at subsistence levels (30 percent of the class, eating rice and beans); and the majority of Earth citizens, who eat less than their daily needs (60 percent of the class, eating rice only).

After students have finished their meals, have them discuss their feelings about this Hunger Banquet experience in small groups. Encourage students to write their reactions in a journal. It is hoped that students will recognize how much food is available to people in less-fortunate circumstances around the world. For further information about the Hunger Banquet or for additional suggestions for activities to enhance the experience, contact the headquarters of Oxfam America, 115 Broadway, Boston, MA 02116 (phone 617-482-1211). Ask for the Hunger Banquet Liaison.

With more preparation, this activity can be developed to include an entire grade level at your school. Although this activity can be done at any time during the module, it makes an effective introduction to the hunger issue.

Getting Started

- Have students read the Memo to the Student and the overview on pages 2–3 in the Student DataBook prior to beginning the module. Also be sure students are aware that there is a Glossary in the back of their DataBooks.
- Display **Overhead 1** on the projector and ask students to read the quote by Lappé and Collins. Ask them if they have ever felt powerless and have them write their responses. Briefly discuss how powerlessness relates to hunger. [Hunger results from people's inability to secure food for adequate nourishment.]


4

4 Geographic Inquiry into Global Issues

Lesson

Why is Angelo Chol hungry?

Objectives

In this lesson, you will

- Recognize the social and economic indicators of hunger.
- See how your food intake compares to your body's needs.
- Map and interpret the global distribution of food intake.

Glossary Words

calorie
gross national product (GNP)
starvation

What is it like to always be hungry?

You get hungry when you miss a meal. Maybe you get involved with some interest and just forget to eat or decide to put off eating for a while. But millions of people in the world are always hungry because they don't have enough food. Sudan, in northern Africa (Figure 1 on page 6), is a country that has many people who suffer permanently from hunger. The following story was written about a teenage boy in Sudan.

One teen's bout with hunger

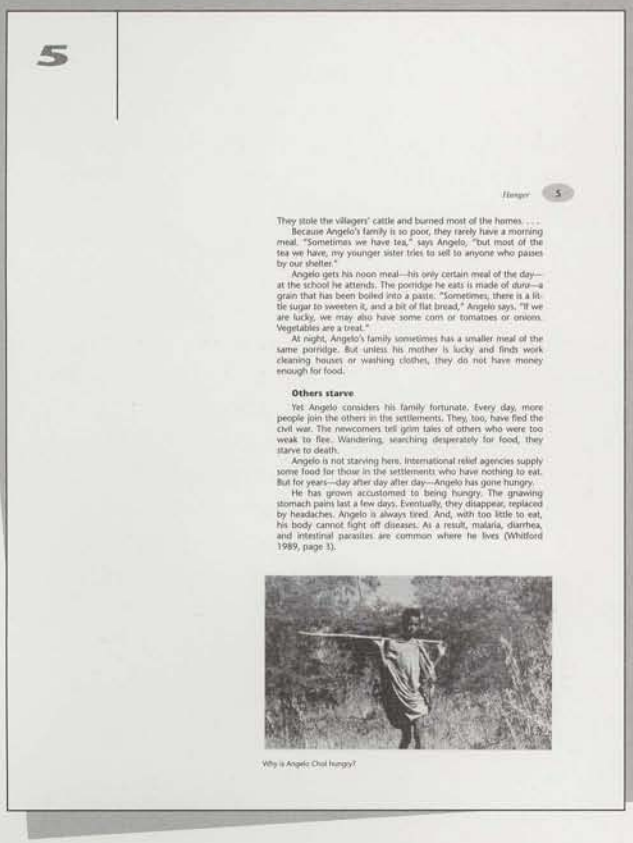
Forced to flee

Four years ago, Angelo and his family were forced to flee from their home in southern Sudan. Armed tribesmen, fighting the Sudanese government in a civil war, had invaded Angelo's village.

Procedures

What is it like to always be hungry? (pages 4–6)

A. After students read the excerpt about Angelo Chol, have them answer Questions 1–4 on page 6 or use these questions as a basis for discussion.


5

Hunger 5

They stole the villagers' cattle and burned most of the homes. . . .

Because Angelo's family is so poor, they rarely have a morning meal. "Sometimes we have tea," says Angelo, "but most of the tea we have, my younger sister tries to sell to anyone who passes by our shelter."

Angelo gets his noon meal—his only certain meal of the day—at the school he attends. The porridge he eats is made of *dura*—a grain that has been boiled into a paste. "Sometimes, there is a little sugar to sweeten it, and a bit of flat bread," Angelo says. "If we are lucky, we may also have some corn or tomatoes or onions. Vegetables are a treat."

At night, Angelo's family sometimes has a smaller meal of the same porridge. But unless his mother is lucky and finds work cleaning houses or washing clothes, they do not have money enough for food.

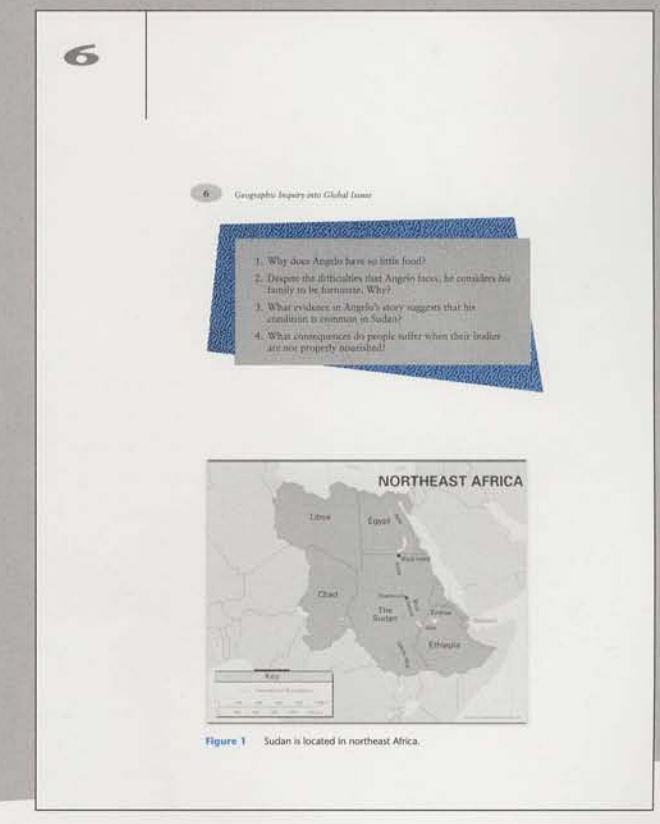
Others starve

Yet Angelo considers his family fortunate. Every day, more people join the others in the settlements. They, too, have fled the civil war. The newcomers tell grim tales of others who were too weak to flee. Wandering, searching desperately for food, they starve to death.

Angelo is not starving here. International relief agencies supply some food for those in the settlements who have nothing to eat. But for years—day after day after day—Angelo has gone hungry.

He has grown accustomed to being hungry. The gnawing stomach pains last a few days. Eventually, they disappear, replaced by headaches. Angelo is always tired. And, with too little to eat, his body cannot fight off diseases. As a result, malaria, diarrhea, and intestinal parasites are common where he lives (Whitford 1989, page 5).

Why is Angelo Chol hungry?


6

6 Geographic Inquiry into Global Issues

1. Why does Angelo have so little food?
2. Despite the difficulties that Angelo faces, he considers his family to be fortunate. Why?
3. What evidence in Angelo's story suggests that his condition is common in Sudan?
4. What consequences do people suffer when their bodies are not properly nourished?

NORTHEAST AFRICA

Libya
Egypt
Chad
The Sudan
Ethiopia

Figure 1 Sudan is located in northeast Africa.

Questions and Answers for page 6

1. Why does Angelo have so little food?
   - The Sudanese civil war has caused people to move away from their homes and jobs and, consequently, their usual places where they had obtained food. In addition, a war of any kind fought on one's own territory will disrupt food shipments and divert some food supplies to the armies fighting the war. The causes of Sudan's civil war will be explored in Lesson 3.

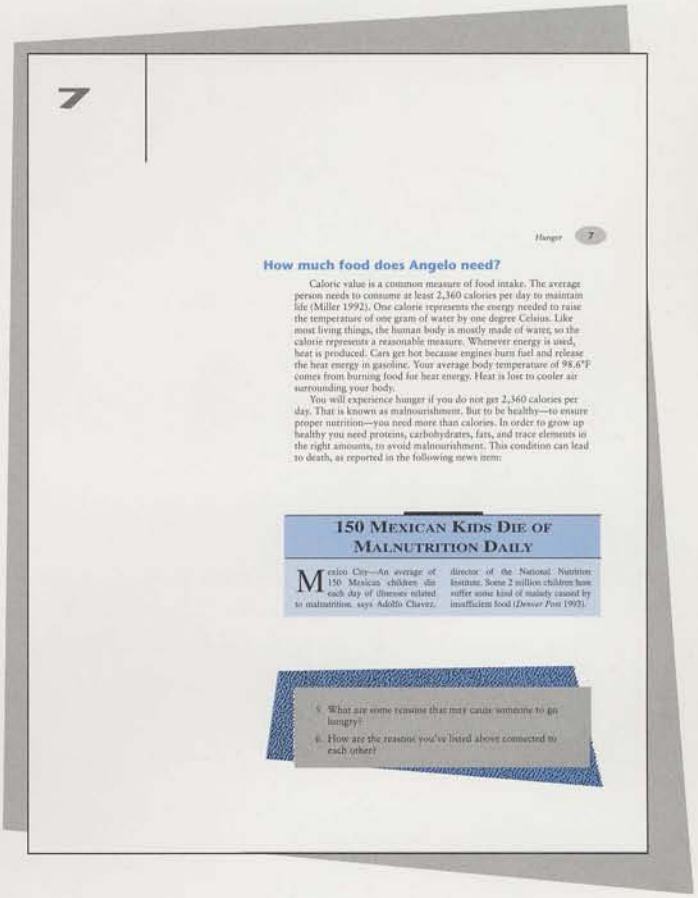
2. Despite the difficulties that Angelo faces, he considers his family to be fortunate. Why?
   - His family still gets to eat from time to time, avoiding starvation and death. That they are still alive compared to so many others may be a reason he considers his family to be fortunate.

3. What evidence in Angelo's story suggests that his condition is common in Sudan?
   - The references to fellow citizens migrating from afar indicate that this is a civil war not confined to one or two small provinces, but widespread, affecting many.

continued

How much food does Angelo need? (page 7)

B. Divide the class into cooperative learning groups of three or four and have the groups read the text on page 7 before listing their answers to Questions 5 and 6. Distribute copies of **Activity 1** to help groups categorize their answers to these questions. You may stimulate the search for interconnected reasons with the following example: Continuing rapid population growth in an area already growing too little food will only make the situation worse.



7

Hunger 7

How much food does Angelo need?

Caloric value is a common measure of food intake. The average person needs to consume at least 2,360 calories per day to maintain life (Miller 1992). One calorie represents the energy needed to raise the temperature of one gram of water by one degree Celsius. Like most living things, the human body is mostly made of water, so the calorie represents a reasonable measure. Whenever energy is used, heat is produced. Cars get hot because engines burn fuel and release the heat energy in gasoline. Your average body temperature of 98.6°F comes from burning food for heat energy. Heat is lost to cooler air surrounding your body.

You will experience hunger if you do not get 2,360 calories per day. That is known as malnourishment. But to be healthy—to ensure proper nutrition—you need more than calories. In order to grow up healthy you need proteins, carbohydrates, fats, and trace elements in the right amounts, to avoid malnourishment. This condition can lead to death, as reported in the following news item:

150 Mexican Kids Die of Malnutrition Daily

Mexico City—An average of 150 Mexican children die each day of illnesses related to malnutrition, says Adolfo Chavez, director of the National Nutrition Institute. Some 2 million children here suffer some kind of malady caused by insufficient food (*Denver Post* 1993).

5. What are some reasons that may cause someone to go hungry?
6. How are the reasons you've listed above connected to each other?

4. What consequences do people suffer when their bodies are not properly nourished?
   - Without adequate food, the human body will begin to suffer from fatigue. If the hunger condition persists, the body will become unable to fight off various diseases. Eventually, people die of hunger not just from a lack of food energy but also from a weakened immune system, unable to fight off otherwise minor conditions such as the common cold.

Questions and Answers for page 7

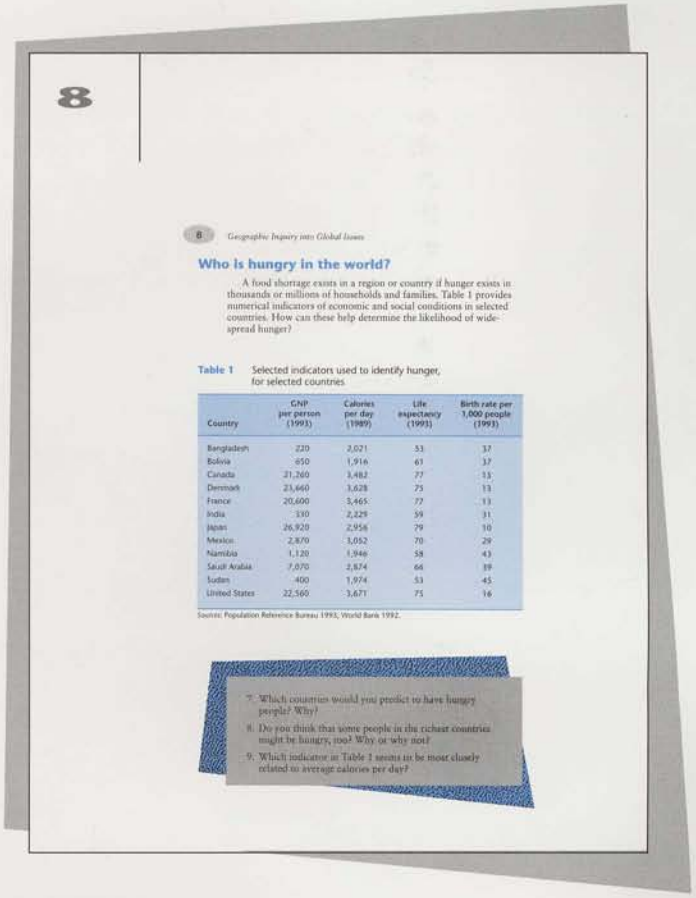
5–6. What are some reasons that may cause someone to go hungry? How are these reasons connected to each other?
   - Students will mention civil war and drought, reasons derived from the reading about Angelo Chol. Have students also give reasons based on their previous knowledge gained from other classes, televison, and newspapers. Have a spokesperson from each group share their answers to Question 6. List the groups' answers on the chalkboard.

C. Have students count the number of calories they consume in a week by keeping a daily log and have them report on the results periodically to the class. Make available to students a simple calorie-counting booklet to assist with this project (these can be found in most supermarkets). Ask students to write down everything they ate in the last 24 hours and the caloric value of each item. Have students compare their caloric intake to the average calorie needs of people.

Note: Students may see an irony after reading the text: In wealthy countries such as the United States, people count calories with the intention of losing weight; in the Sudan, people count calories with the intention of gaining weight!

Who is hungry in the world? (pages 8–9)

D. Have groups analyze Table 1 on page 8, which gives socioeconomic indicators that are correlated to hunger. Distribute **Mini-Atlas maps 1** and **2** to each group. Groups can use the table and maps to identify likely places to find hungry people. [Countries with low GNP tend to have lower average daily caloric intake and thus, lower life expectancy.] Have groups answer Questions 7–9.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8 *Geographic Inquiry into Global Issues*

Who is hungry in the world?

A food shortage exists in a region or country if hunger exists in thousands or millions of households and families. Table 1 provides numerical indicators of economic and social conditions in selected countries. How can these help determine the likelihood of widespread hunger?

Table 1 Selected indicators used to identify hunger, for selected countries

Country	GNP per person (1993)	Calories per day (1989)	Life expectancy (1993)	Birth rate per 1,000 people (1993)
Bangladesh	220	2,021	53	37
Bolivia	650	1,916	61	37
Canada	21,260	3,482	77	15
Denmark	23,660	3,628	75	13
France	20,600	3,465	77	13
India	330	2,229	59	31
Japan	26,920	2,956	79	10
Mexico	2,870	3,052	70	29
Namibia	1,120	1,946	58	43
Saudi Arabia	7,070	2,874	66	39
Sudan	400	1,974	53	45
United States	22,560	3,671	75	16

Source: Population Reference Bureau 1993; World Bank 1992.

7. Which countries would you predict to have hungry people? Why?
8. Do you think that some people in the richest countries might be hungry, too? Why or why not?
9. Which indicator in Table 1 seems to be most closely related to average calories per day?

Questions and Answers for page 8

7. Which countries would you predict to have hungry people? Why?

   - From Table 1, students can identify Bangladesh, Bolivia, India, Namibia, and Sudan. All these places have daily average caloric intake below the minimum of 2,360 mentioned in the text. All also have relatively lower GNP and life expectancy and higher birth rates. Encourage students to use the Mini-Atlas maps to find other examples of countries not listed in the table.

8. Do you think that some people in the richest countries might be hungry, too? Why or why not?

   - For those students who answer *yes* to the question, encourage them to cite specific examples of where they have seen or heard of hungry people in the United States or Europe. Large urban areas such as South Central L.A. or poor, rural regions such as Appalachia may be mentioned. For the second part of the question, students might mention poverty, homelessness, or a natural disaster such as an earthquake or a hurricane.

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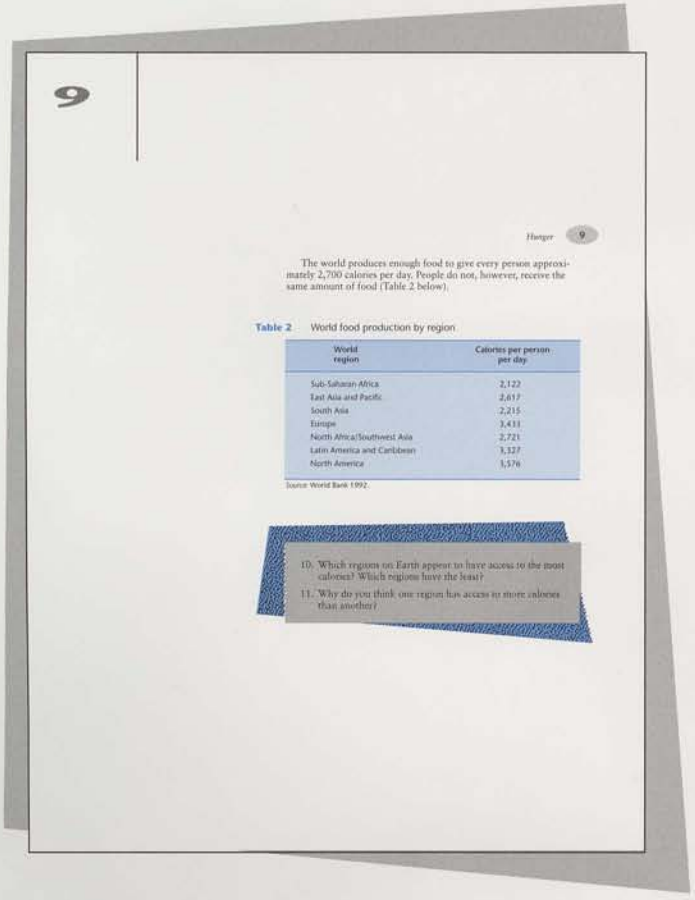


9

Hunger 9

The world produces enough food to give every person approximately 2,700 calories per day. People do not, however, receive the same amount of food (Table 2 below).

Table 2 World food production by region

World region	Calories per person per day
Sub-Saharan Africa	2,122
East Asia and Pacific	2,617
South Asia	2,215
Europe	3,431
North Africa/Southwest Asia	2,721
Latin America and Caribbean	3,127
North America	3,576

Source: World Bank 1992.

10. Which regions on Earth appear to have access to the most calories? Which regions have the least?
11. Why do you think one region has access to more calories than another?

E. Close the lesson by giving groups time to analyze Table 2 on page 9, which shows the daily caloric intake by world region. Discuss Questions 10 and 11.

9. Which indicator in Table 1 seems to be most closely related to average calories per day?

   - There are two possible answers here. Students may make a connection between calories and GNP, noting that low GNP countries generally have available few calories per person. On Mini-Atlas maps 1 and 2, students may spot the close correspondence between GNP and daily caloric intake by country. The other connection has to do with the consequences of calorie intake. Here, the connection is a relationship between calories and life expectancy, where fewer calories leads to a shorter life span.

Questions and Answers for page 9

10. Which regions on Earth appear to have access to the most calories? Which regions have the least?

    - The world's more developed regions—Europe and North America—along with Latin America have the highest average daily calorie intake. Regions with an average daily calorie intake less than the nutritional minimum of 2,360 include Sub-Saharan Africa and South Asia; the North Africa/Southwest Asia and East Asia/Pacific regions barely exceed this minimum.

11. Why do you think one region has access to more calories than another?

    - Encourage groups to speculate about reasons for the geographical patterns of potential hunger. This question leads into the major case study on the Sudan, which explores the various reasons for hunger in one poor nation.

Younger students may need more guidance to answer this question if they are not familiar with the world's regional disparities in economic development.

Lesson 2

How does drought cause hunger in Sudan?

Time Required

Two 50-minute class periods

Materials Needed

Small candies
Copies of Activity 2 for each pair of students
Red and blue pens or pencils
Transparency of Overhead 2

Glossary Words

drought

famine

starvation

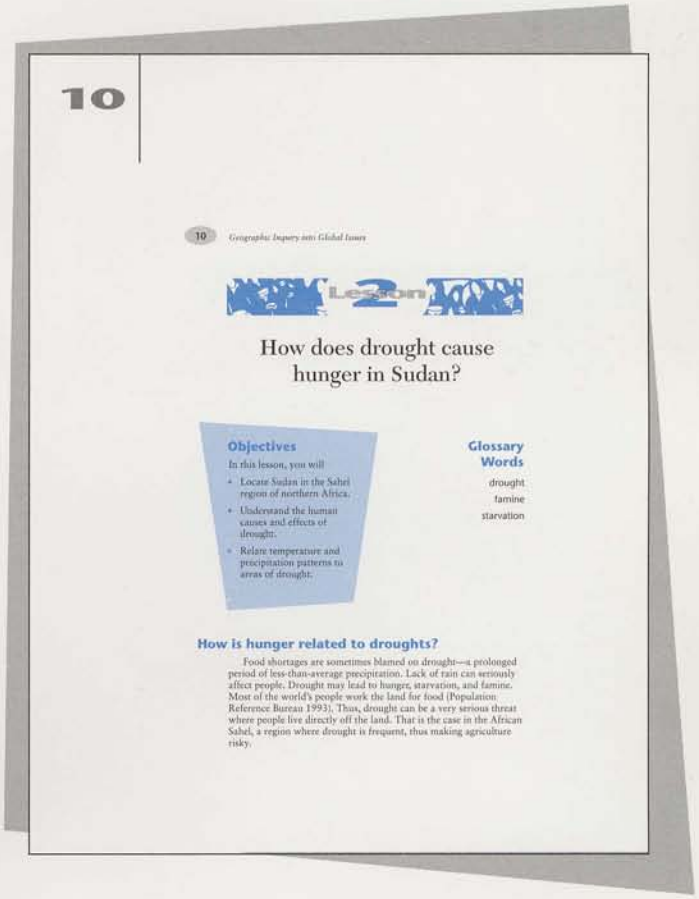
Procedures

How is hunger related to droughts? (page 10)

A. Ask students to read this text, then gather them in a tight circle. Give out four candies to each student. Tell them that this represents the food they need for each season of the year. Say that it was a good year and that there was enough food for all to eat well.

After they enjoy their good fortune, announce that a severe drought has limited food production and now there is not enough for everyone. Give out four candies to about three-fourths of your class, and none to the other quarter. Those people must seek food elsewhere in the room. Give them one minute to find their food, representing one year. Place a few bags of candies around the room, labeled UNICEF, Red Cross, Catholic Relief, or Christian Children's Fund, but make sure that most of the students fail to get enough.

Ask: As a farmer, what did you have to do to get the food you need? Where did the food come from? Why wasn't there enough food to go around? You can have students write responses to these questions.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10 Geographic Inquiry into Global Issues

Lesson 2

How does drought cause hunger in Sudan?

Objectives
In this lesson, you will
- Locate Sudan in the Sahel region of northern Africa.
- Understand the human causes and effects of drought.
- Relate temperature and precipitation patterns to areas of drought.

Glossary Words
drought
famine
starvation

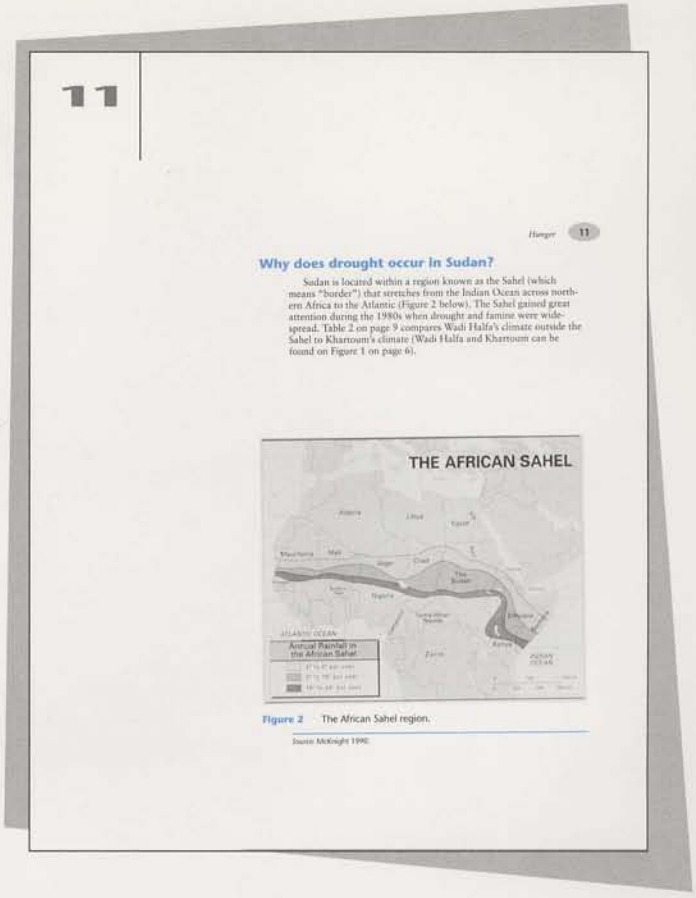
How is hunger related to droughts?

Food shortages are sometimes blamed on drought—a prolonged period of less-than-average precipitation. Lack of rain can seriously affect people. Drought may lead to hunger, starvation, and famine. Most of the world's people work the land for food (Population Reference Bureau 1993). Thus, drought can be a very serious threat where people live directly off the land. That is the case in the African Sahel, a region where drought is frequent, thus making agriculture risky.

Why does drought occur in Sudan? (pages 11–14)

B. Have students read the text and discuss Questions 1–2 on page 12. These questions give students a chance to think about Sudan's climate in terms of a place likely to be more familiar to them (Egypt).

> Younger students may need more background on the characteristics of desert climates and on the basic physical geography of Northern Africa.



11

Hunger 11

Why does drought occur in Sudan?

Sudan is located within a region known as the Sahel (which means "border") that stretches from the Indian Ocean across northern Africa to the Atlantic (Figure 2 below). The Sahel gained great attention during the 1980s when drought and famine were widespread. Table 2 on page 9 compares Wadi Halfa's climate outside the Sahel to Khartoum's climate (Wadi Halfa and Khartoum can be found on Figure 1 on page 6).

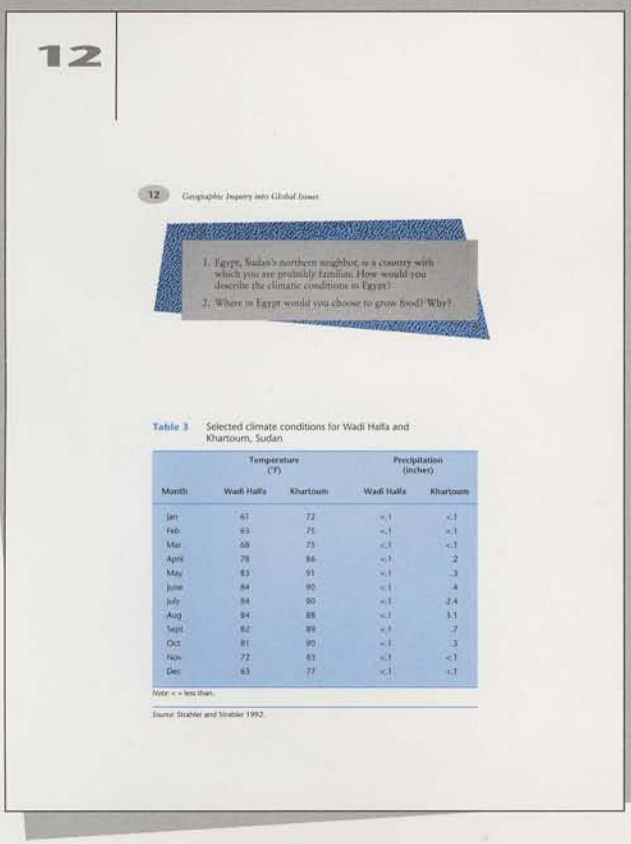
THE AFRICAN SAHEL

ATLANTIC OCEAN

Annual Rainfall in the African Sahel

Figure 2 The African Sahel region.

Source: McKnight 1996



12

12 *Geographic Inquiry into Global Issues*

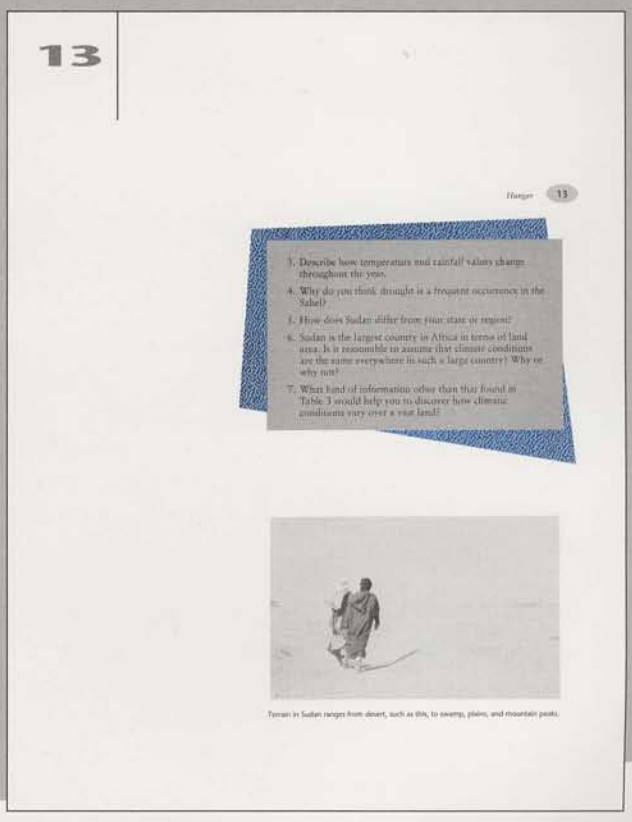
1. Egypt, Sudan's northern neighbor, is a country with which you are probably familiar. How would you describe the climatic conditions in Egypt?
2. Where in Egypt would you choose to grow food? Why?

Table 3 Selected climate conditions for Wadi Halfa and Khartoum, Sudan

	Temperature (°F)		Precipitation (inches)	
Month	Wadi Halfa	Khartoum	Wadi Halfa	Khartoum
Jan	61	72	<.1	<.1
Feb	63	75	<.1	<.1
Mar	68	75	<.1	<.1
April	78	86	<.1	.2
May	83	91	<.1	.3
June	84	90	<.1	.4
July	84	90	<.1	2.4
Aug	84	88	<.1	3.1
Sept	82	89	<.1	.7
Oct	81	90	<.1	.3
Nov	72	83	<.1	<.1
Dec	63	77	<.1	<.1

Note: < = less than.

Source: Strahler and Strahler 1992.



13

Hunger 13

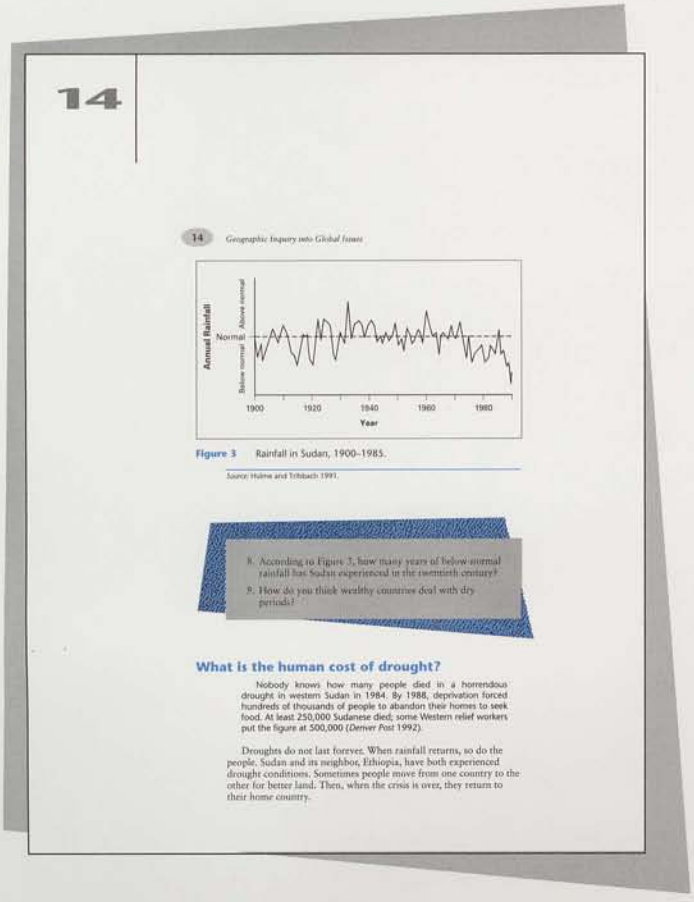
3. Describe how temperature and rainfall values change throughout the year.
4. Why do you think drought is a frequent occurrence in the Sahel?
5. How does Sudan differ from your state or region?
6. Sudan is the largest country in Africa in terms of land area. Is it reasonable to assume that climate conditions are the same everywhere in such a large country? Why or why not?
7. What kind of information other than that found in Table 3 would help you to discover how climatic conditions vary over a year land?

Terrain in Sudan ranges from desert, such as this, to swamp, plains, and mountain peaks.

Questions and Answers for page 12

1. Egypt, Sudan's northern neighbor, is a country with which you are probably familiar. How would you describe the climatic conditions in Egypt?
   - Hot and dry desert conditions may come to mind for students, particularly if they are reminded of common images such as the pyramids or the Sphinx.

2. Where in Egypt would you choose to grow food? Why?
   - Given that Egypt is located in a desert climate region, food can only be grown with irrigation. In Egypt, this means the diversion of Nile River water for irrigation projects.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14 Geographic Inquiry into Global Issues

Figure 3 Rainfall in Sudan, 1900–1985.

Source: Hulme and Tribbach 1991.

8. According to Figure 3, how many years of below normal rainfall has Sudan experienced in the twentieth century?
9. How do you think wealthy countries deal with dry periods?

What is the human cost of drought?

Nobody knows how many people died in a horrendous drought in western Sudan in 1984. By 1988, deprivation forced hundreds of thousands of people to abandon their homes to seek food. At least 250,000 Sudanese died; some Western relief workers put the figure at 500,000 (*Denver Post* 1992).

Droughts do not last forever. When rainfall returns, so do the people. Sudan and its neighbor, Ethiopia, have both experienced drought conditions. Sometimes people move from one country to the other for better land. Then, when the crisis is over, they return to their home country.

C. Distribute copies of **Activity 2** to each pair of students and have them help one another plot climate data for two places in Sudan, one near the Egyptian border (Wadi Halfa) and one in a wetter region (Khartoum), from the data in Table 3 on page 12. Have students use red and blue pencils to more easily separate temperature from precipitation data. Both cities are plotted on one graph to facilitate comparison (see *Key for Activity 2* on **Overhead 2**).

Have student pairs work together to answer Questions 3–7 on page 13, which pertain to Table 3, and Questions 8–9 on page 14, which are based on Figure 3 on page 14. Project Overhead 2 to foster discussion of Questions 3–7.

Questions and Answers for pages 13 and 14

3. Describe how temperature and rainfall values change throughout the year.

   - Students may notice that temperatures show only a slight cooling in the winter. They may also note a modest wet season in Khartoum. Precipitation in Wadi Halfa is almost nonexistent throughout the year.

4. Why do you think drought is a frequent occurrence in the Sahel?

   - Ask students what kind of information they need to answer this—it would be necessary to find climatic information that goes back many decades, even centuries, to see patterns of drought over time. You may instruct them that, indeed, drought conditions are long-term and likely to continue for at least many more centuries. As precipitation values drop, temperatures can fluctuate more. This is because moisture acts as a buffer to slow down the rate of cooling and heating by absorbing and releasing energy.

5. How does Sudan differ from your state or region?

   - Have students compare the climatic conditions and vegetation of your state to what they now know about Sudan. For people in the eastern half of the United States, the contrast to Sudan's climate is dramatic. If you reside in an arid region, students may be more familiar with the climatic conditions of Sudan. If you reside in a large state, such as California, have students describe how the range of conditions varies with latitude (wetter in the north; drier in the south). In the same manner, Sudan (the largest country in Africa) displays latitudinal variation, from very dry in the north to somewhat more wet in the south. This will have an effect on vegetation and the possibility of agriculture.

6. Sudan is the largest country in Africa in terms of land area. Is it reasonable to assume that climatic conditions are the same everywhere in such a large country? Why or why not?

   - It may be useful for students to recall their own state or a very large state in the United States before they answer this question. For example, Texas includes both very dry and very wet climates. It is, therefore, not reasonable to assume that large states or countries have the same climate everywhere.

7. What kind of information other than that found in Table 3 would help you to discover how climatic conditions vary over a vast land?

   - Temperature and precipitation averages help define climate, but the two stations, Wadi Halfa and Khartoum, are just two places in a large country. Smaller-scale variations may exist where conditions are very different. Additional reporting stations scattered thoughout the country would be helpful in providing more information.

continued

8. According to Figure 3, how many years of below-normal rainfall has Sudan experienced in the twentieth century?

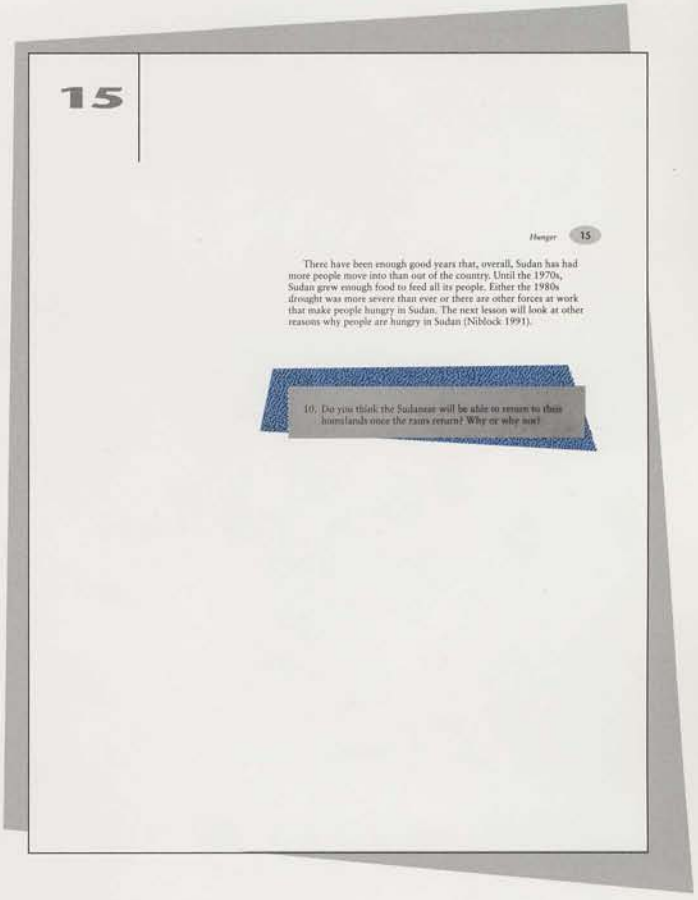
   - There have been 46 years of below-normal rainfall. This number represents more than half of the total number of years from which there is data available. Only about 40 years have had normal or greater than normal rainfall. This figure demonstrates very clearly the extreme variability of rainfall in desert climates. You may wish to ask students whether "normal" rainfall has any real meaning in such climates. In truth, the normal is an average based on a long period (at least 30 years), but such averages really hide how unpredictable rainfall is in any given year in a desert.

9. How do you think wealthy countries deal with dry periods?

   - This question anticipates Lesson 5, wherein hunger in Canada is examined. Wealthy countries have several ways of dealing with drought that prepare for and respond to dry periods. Wealthy countries build dams and reservoirs—to store water until it is needed during drought—and construct irrigation systems to distribute this impounded water. Such countries can also respond to drought by shipping food from areas of surplus to dry areas until the threat is over. They can also afford to buy food from other countries to meet a hunger need. An implicit irony here, again with respect to Lesson 5, asks that if a wealthy country can build dams and buy food, why are there any hungry people at all in wealthy countries?

What is the human cost of drought? (page 14)

D. Have the student pairs read this text and discuss Question 10 on page 15. The human cost of drought can and should be measured by more than the number of dead and dying. Migration is a human response to conditions of environmental or social and political stress. Sometimes people migrate because they are drawn to what they perceive to be better conditions elsewhere, without a strong push from home. For the drought-stricken Sudanese, migration was the only way to obtain more food. For them, an additional cost of hunger was the potential loss of their homes, land, and a way of life on which they had come to depend.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There have been enough good years that, overall, Sudan has had more people move into than out of the country. Until the 1970s, Sudan grew enough food to feed all its people. Either the 1980s drought was more severe than ever or there are other forces at work that make people hungry in Sudan. The next lesson will look at other reasons why people are hungry in Sudan (Niblock 1991).

10. Do you think the Sudanese will be able to return to their homelands once the rains return? Why or why not?

Question and Answer for page 15

10. Do you think the Sudanese will be able to return to their homelands once the rains return? Why or why not?

    - Encourage students to speculate and express opinions. This question prepares students to consider other reasons for hunger besides environmental extremes. Lesson 3 begins examination of the social and political dimensions of hunger. The newspaper extract describes the consequences of drought over the period of four years. The final two paragraphs suggest that droughts are periodic in nature. As the drought conditions subside, human adjustments occur. Sometimes people move back to drought-stricken areas. Migration back to these lands may be hindered, however, by social conditions. Political unrest or economic collapse in their home region may prevent their return—as was the case in Sudan. The 1990s have not seen a reduction of civil strife, so it is likely that the drought- and civil war–induced migration will continue until social conditions stabilize.

Lesson 3

How do political and economic conditions lead to hunger in Sudan?

Time Required

Two 50-minute class periods

Materials Needed

Mini-Atlas maps 3 and 4
Transparency of Overhead 3
Copies of Activity 3 for each group of students

Glossary Words

animism

colony

desertification

marginal land

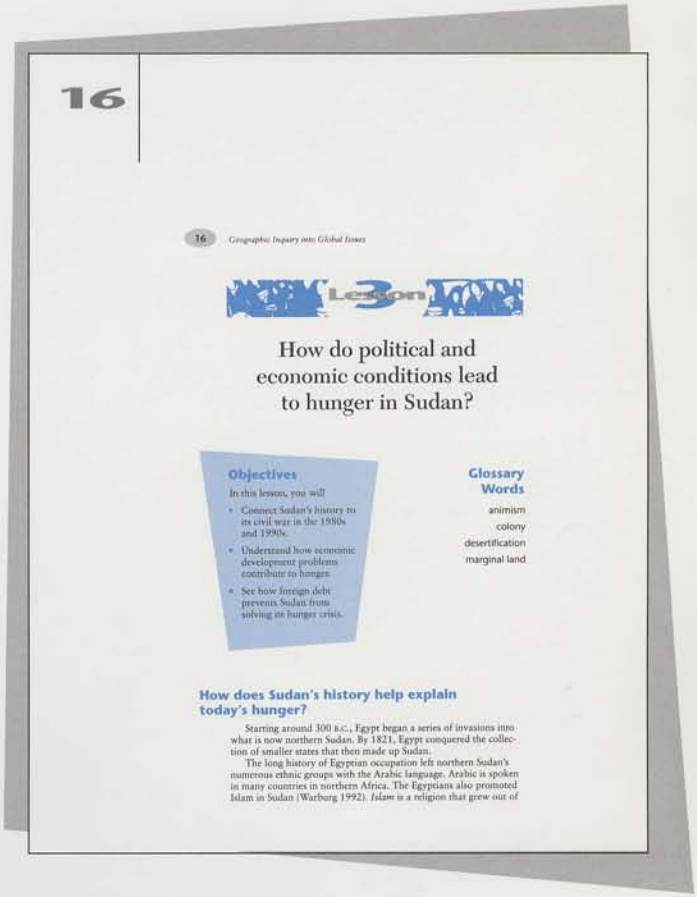
Getting Started

Have students recall their knowledge of the U.S. Civil War. Who were the main parties in the war? When was it fought? What issues were involved? Have students list on the chalkboard the consequences of that civil war. Encourage students to consider food supply problems if they do not mention this themselves.

Procedures

How does Sudan's history help explain today's hunger? (pages 16–17)

A. Divide the class into small groups. Instruct students to read this text, which provides the historical context of Sudan's civil war and describes the different ethnic and religious backgrounds of the parties involved. Ask the groups to write a description of how this historical background helps explain Sudan's present political and economic problems.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16 Geographic Inquiry into Global Issues

Lesson 3

How do political and economic conditions lead to hunger in Sudan?

Objectives

In this lesson, you will

- Connect Sudan's history to its civil war in the 1980s and 1990s.
- Understand how economic development problems contribute to hunger.
- See how foreign debt prevents Sudan from solving its hunger crisis.

Glossary Words

animism
colony
desertification
marginal land

How does Sudan's history help explain today's hunger?

Starting around 300 B.C., Egypt began a series of invasions into what is now northern Sudan. By 1821, Egypt conquered the collection of smaller states that then made up Sudan.

The long history of Egyptian occupation left northern Sudan's numerous ethnic groups with the Arabic language. Arabic is spoken in many countries in northern Africa. The Egyptians also promoted Islam in Sudan (Warburg 1992). *Islam* is a religion that grew out of

Distribute **Mini-Atlas maps 3** and **4** to the groups. Ask the groups to describe the patterns of major religions and language groups within Sudan. (The map of language groups can be used as a surrogate to represent major ethnic groups.) Examination of these maps of Africa may help students understand the deep divisions within Sudan. [Sudan has been hindered by colonial occupation throughout its history. When Egypt and Britain controlled Sudan, neither did very much to help Sudan develop for the future—both countries merely exported Sudanese resources. Even in the late twentieth century, Sudan still has relatively little infrastructure, including agricultural

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some of the same traditions and in the same general region as Judaism and Christianity. Followers of Islam, called *Muslims*, can be found in many countries of the world.

Southern Sudan did not feel the effects of Egyptian occupation as much as the north. Thus, today southern Sudanese are ethnically related more to Black Africans than Egyptians. Their religious preference is more likely to be Christian or animist. Animism is not a religious faith like the others. It is a belief system that is tied to nature rather than a specific god. Animism is older than Christianity and Islam and is still practiced by people in many parts of the world, including Native Americans and the Inuit of Canada.

Rule by Egypt lasted until 1881, when a Muslim revolt ousted the foreign rulers. A 17-year period of relative peace and independence was broken in 1898, again by Egypt. At the time, Egypt was under British rule, so Sudan became a British colony. Like many former colonies of European nations, Sudan gained its independence following World War II, in 1956 (Rand McNally 1989).

Colonial powers like Britain sometimes built facilities such as bridges, roads, rail lines, and sewers in their colonies. The British, however, did very little to build such facilities in Sudan. Also, they were very reluctant to develop the water resources of Sudan's part of the Nile. Had they done so, it would have meant less water for Egypt, downstream from Sudan. Britain had more money invested in Egypt—in the hopes of gaining more profits—so, they did little to develop Sudan (Allan 1992).

Introduced by the Egyptians, Islam is the primary religion in northern Sudan.

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How did the civil war in Sudan lead to hunger?

During times of civil war, a country can become severely stressed, or even completely collapse. As in the American Civil War of the 1860s, the Sudanese civil war of the 1980s and 1990s is a struggle between two regions of the country (Figure 4 below).

	Government Forces	versus	Sudanese People's Liberation Army (SPLA)
Who			
Where	Northern and Central Sudan		Southern Sudan
Religion	Strict Islamic government		Christian (particularly political leaders) and Animist
Goals	Impose Islamic law and extend Islamic influence into neighboring states		Maintain traditional beliefs and customs. Promote economic development and stop the spread of Islam into southern Sudan
Resources	Sufficient money and weapons imported from China and Iran		Little money or power. Some military support from the United States.
Impact	Blocks foreign food shipments. Declared holy war on non-Arab Nuba region in north.		Blocks foreign food shipments. Splits within SPLA aggravate problems in south.

Figure 4 The civil war in Sudan.

Source: Wartburg 1992.

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The human cost

- Three million people have left homes in the south.
- One million people have taken refuge in restricted locations.
- Hundreds of thousands of people were left scattered across the south.
- As a result of the holy war, people "arrive at the camps as living skeletons, and . . . men more than 6 feet tall weigh less than 70 pounds" (Perlez 1992).
- In an attempt by the SPLA to take the southern town of Juba back from government forces, people "found walking about at dusk or dawn are shot at sight. Young men and educated persons are picked up by the security guards and are never heard of again. Some slaughtered bodies have been seen floating in the River Nile" (Perlez 1992).

1. How have parties to the civil war made the hunger problem worse?
2. Why has there been widespread homelessness? Why does this make the hunger problem worse?
3. How does a civil war, or any war, affect a country's facilities such as roads, drinking water, and bridges?

How does Sudan's poor economy contribute to hunger?

Three problems help explain Sudan's hunger. Sudan has limited land for growing food. It also has a rapidly expanding population and large debts to foreign countries. Here is a closer look at these problems.

resources, on which to base economic development. In terms of political problems, students may note that the different ethnic and religious backgrounds of peoples in northern and southern Sudan could lead to conflict. Sudan's national boundaries—which were drawn by European colonial powers—encompass at least two major religions (Islam in the north; Christian and animist in the south) and two major language groups (Arabic in the north; African groups in the south).]

How did the civil war in Sudan lead to hunger? (pages 18–19)

B. Have students examine Figure 4 on page 18 and the text following it. Groups can answer Questions 1–3 on page 19 to prepare for the simulated court-hearing activity (Procedure C).

Questions and Answers for page 19

1. How have parties to the civil war made the hunger problem worse?
   - Encourage students to examine both sides engaged in the civil war and how each has made the problem worse by hindering food-aid shipments and by not sitting down to the peace table. In addition, the armies need food and sometimes have forcibly appropriated aid shipments for themselves.

2. Where has there been widespread homelessness? Why does this make the hunger problem worse?
   - The civil war has had major impacts in southern Sudan. Homelessness and continued migrations make hunger worse by making it hard for relief agencies to keep track of those most in need of food. Also, lack of permanent residence hinders economic development.

3. How does a civil war, or any war, affect a country's facilities, such as roads, drinking water, and bridges?
   - All of the following are examples of possible consequences of war: road and rail damage; river blockage; airport runway damage; power-line disruption; radio, television, and telephone communication outages; bridge damage; sewage treatment plant problems; and water-supply disruption.

C. Tell students there will be a World Court hearing in which students represent either the Sudanese government forces or the SPLA. This hearing is a chance for both sides to air their positions in an international public forum.

Assign several students to sit as jury and one other to act as a judge. Divide the remainder of the class into groups, each of which will act as the following witnesses: Islamic, Christian, and animist religious leaders; the President of Sudan; military generals; and SPLA rebel leaders. Display **Overhead 3** to give students an idea of their roles. Alternatively, you can simply photocopy Overhead 3 and cut the copy into strips so that each group can examine only its own role.

To convene the court, instruct the judge to ask questions of each group of witnesses. Encourage spontaneous questions and answers based on the details of Sudan's history and culture covered earlier in the lesson. Questions should include the following:

- Who are you and what group do you represent?
- What resources do you have?
- What are your goals?
- How do you want the war to end?
- Are you preventing food shipments to the needy? If so, why? [This question requires students to speculate. Warring factions are preventing food shipments to gain a political advantage. By maintaining a crisis situation, each side can represent itself as the savior of the people.]

Following the hearing, encourage the World Court jury to render a decision based on the witnesses' testimony. After they decide how the Sudanese civil war should be resolved, have the class discuss this decision. Is it fair to all parties?

Younger students may have difficulty with this simulation without specific guidance on how to play each role. You may wish to have students choose one of the roles and write down a description of their position, based on the information in Figure 4. Show Overhead 3 to students after they have completed their own descriptions. Have students compare their own written responses to this transparency.

How does Sudan's poor economy contribute to hunger? (pages 19–21)

D. Divide the class into groups of four or five. Assign each group to be responsible for reading one of the three passages in this section ("Agricultural resources," "Population growth," and "Foreign debt"). These will be the *expert groups* for each of the passages. (There will be more than one expert group for each passage.) Have each group prepare answer keys to the questions following their section.

Note: The section on "Foreign debt" is a little more difficult than the others. You may wish to assign more advanced students to become the experts for this. Similarly, the reading and questions on "Population growth" are somewhat less challenging and could be assigned to less advanced students.

E. Redivide the class into new groups of three students each, with one representative from each expert group comprising these new *teaching groups*. Each expert is responsible for teaching his or her passage to the other pair of students. The other two students are responsible for answering the questions that follow the passage. The expert on that passage can then grade the responses of the other two students based on the answer key prepared by the expert group.

F. Reconvene the class to discuss the five questions covering these three passages.

Questions and Answers for pages 20 and 21

4. How does cotton dependence hurt the Sudanese economy and make hunger worse?
   - When an entire country relies on the export of raw materials, that country will not earn much income unless that raw material resource is in great demand. In the same region as Sudan is Saudi Arabia, which exports crude oil, a valuable raw material. By contrast, Saudi Arabia is a wealthy country. The following questions point out why Sudan, even with the exportable resource cotton, will have a hard time earning much money to overcome its many problems.

5. Why is dependence on one agricultural export risky?
   - This question requires speculation. If a country depends on one export and fails to produce it, then the economy suffers. If the world price drops, the economy again will suffer. The point is that dependence on one crop means the economy is subject to forces beyond the country's control (e.g., weather, world markets, etc.).

6. Why might more people be hungry under poor economic conditions?
   - A poor economy will mean fewer jobs and less money in the hands of workers to purchase food.

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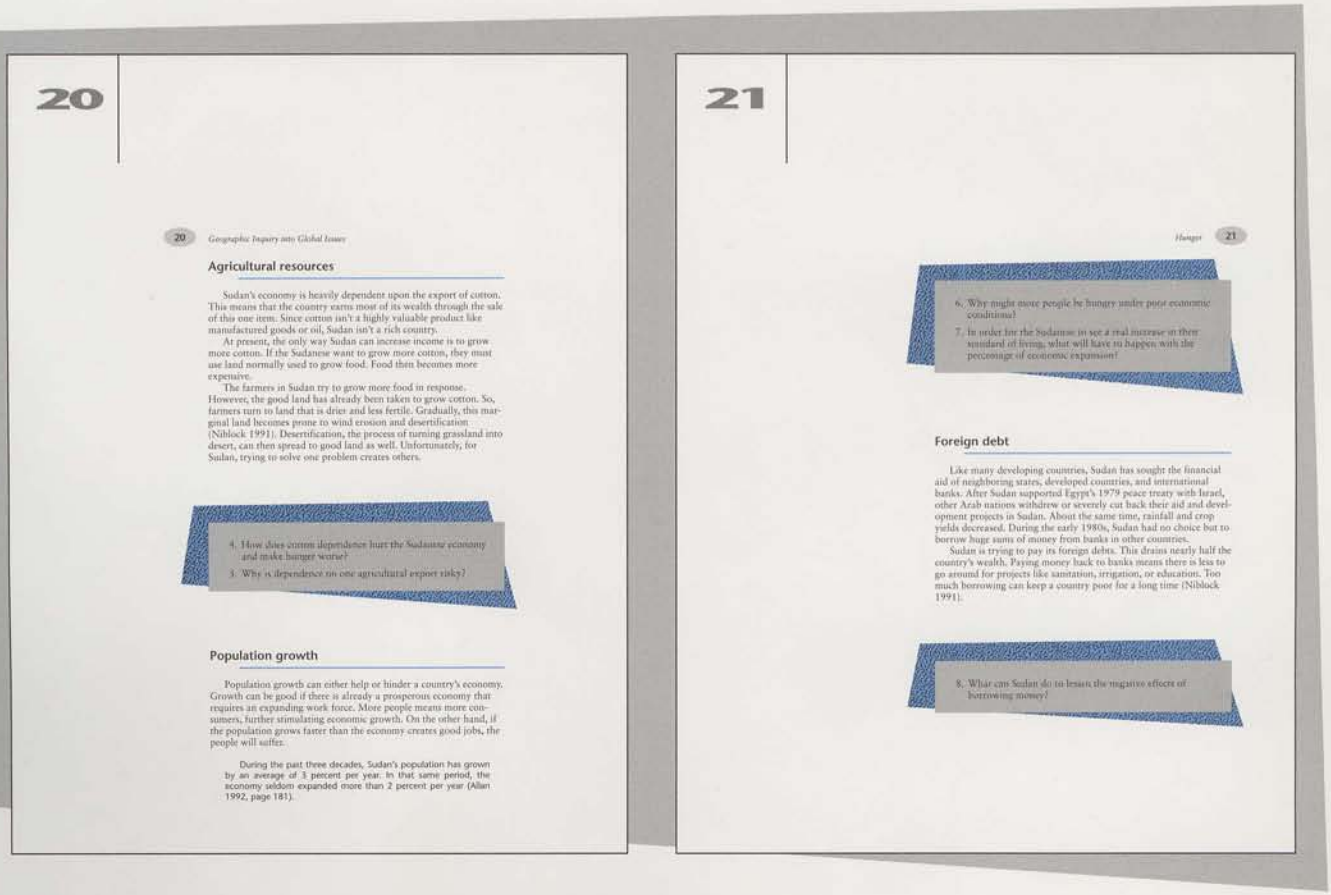

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20 Geographic Inquiry into Global Issues

Agricultural resources

Sudan's economy is heavily dependent upon the export of cotton. This means that the country earns most of its wealth through the sale of this one item. Since cotton isn't a highly valuable product like manufactured goods or oil, Sudan isn't a rich country.

At present, the only way Sudan can increase income is to grow more cotton. If the Sudanese want to grow more cotton, they must use land normally used to grow food. Food then becomes more expensive.

The farmers in Sudan try to grow more food in response. However, the good land has already been taken to grow cotton. So, farmers turn to land that is drier and less fertile. Gradually, this marginal land becomes prone to wind erosion and desertification (Niblock 1991). Desertification, the process of turning grassland into desert, can then spread to good land as well. Unfortunately, for Sudan, trying to solve one problem creates others.

4. How does cotton dependence hurt the Sudanese economy and make hunger worse?
5. Why is dependence on one agricultural export risky?

Population growth

Population growth can either help or hinder a country's economy. Growth can be good if there is already a prosperous economy that requires an expanding work force. More people means more consumers, further stimulating economic growth. On the other hand, if the population grows faster than the economy creates good jobs, the people will suffer.

During the past three decades, Sudan's population has grown by an average of 3 percent per year. In that same period, the economy seldom expanded more than 2 percent per year (Allan 1992, page 181).

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6. Why might more people be hungry under poor economic conditions?
7. In order for the Sudanese to see a real increase in their standard of living, what will have to happen with the percentage of economic expansion?

Foreign debt

Like many developing countries, Sudan has sought the financial aid of neighboring states, developed countries, and international banks. After Sudan supported Egypt's 1979 peace treaty with Israel, other Arab nations withdrew or severely cut back their aid and development projects in Sudan. About the same time, rainfall and crop yields decreased. During the early 1980s, Sudan had no choice but to borrow huge sums of money from banks in other countries.

Sudan is trying to pay its foreign debts. This drains nearly half the country's wealth. Paying money back to banks means there is less to go around for projects like sanitation, irrigation, or education. Too much borrowing can keep a country poor for a long time (Niblock 1991).

8. What can Sudan do to lessen the negative effects of borrowing money?

7. In order for the Sudanese to see a real *increase* in their standard of living, what will have to happen with the percentage of economic expansion?
   - The rate of growth in the economy will have to exceed the population growth rate.

8. What can Sudan do to lessen the negative effects of borrowing money?
   - Unfortunately, there is not much they can do except to ask that creditors cancel the loans—in effect, forgiving the debt and offering the money as a gift. Sudan may also extend the life of the loan, putting off the day when the bill comes due. The economy could pick up, and that would mean more money for loans too, but it will not likely do so in the midst of a civil war. More money can be borrowed to increase economic growth, but any future borrowing by Sudan will have to be invested wisely or the debt spiral will only worsen.

   Assist younger students with this question by noting that there is only so much money to go around. Money is needed to start businesses, hire workers, and feed people. If more money has to be spent paying off loans from foreign banks, then a country will have less cash available for productive purposes.

G. Have student groups fill in **Activity 3** with as many reasons as they can find for Angelo Chol's hunger. (Angelo Chol's story opened Lesson 1; students may wish to reread this.) [Have students review Lessons 2 and 3 to identify the many reasons for hunger in Sudan, including drought, civil war, and economic problems.]

Groups will use a similar sheet for each case study to follow. In Lesson 7, students will refer to these sheets to develop some general principles about the geography of hunger, so it is important for groups to retain all of their Activity sheets.

Lesson 4

How can Sudan gain food security?

Time Required

Two or three 50-minute class periods

Materials Needed

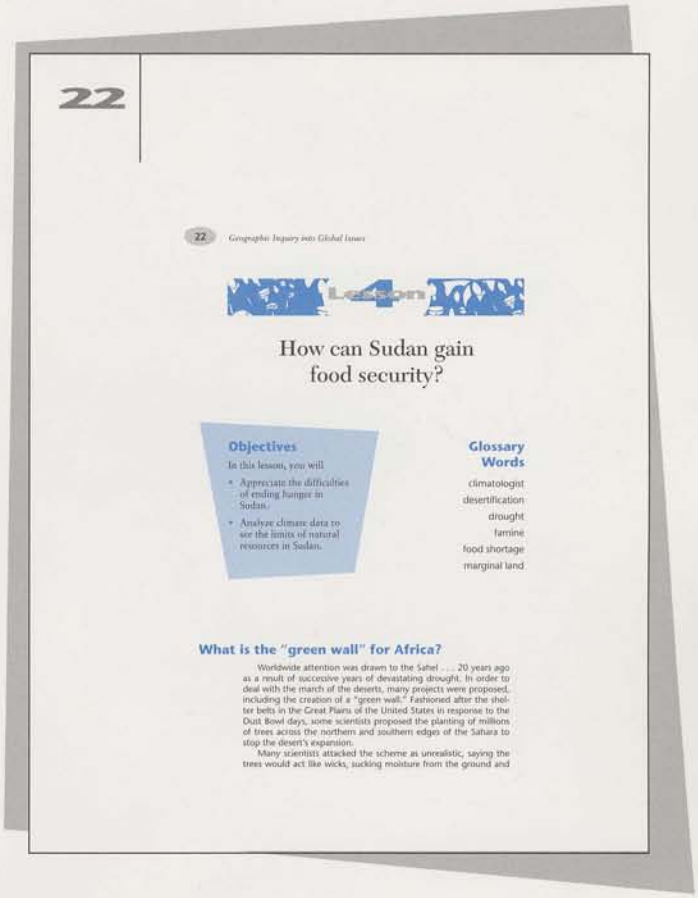
Mini-Atlas map 5
Butcher paper

Glossary Words

climatologist
desertification
drought
famine
food shortage
marginal land

Getting Started

Ask the class to define the term *security.* They may point out that it means to feel safe and to feel certain that conditions are predictable. Then focus discussion on the concept of *food security.* Encourage students to make the conceptual jump that food security means to have a steady and safe supply of food to meet one's needs. This concept includes food needs for a country, a family, or an individual.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22 Geographic Inquiry into Global Issues

Lesson 4

How can Sudan gain food security?

Objectives

In this lesson, you will

- Appreciate the difficulties of ending hunger in Sudan.
- Analyze climate data to see the limits of natural resources in Sudan.

Glossary Words

climatologist
desertification
drought
famine
food shortage
marginal land

What is the "green wall" for Africa?

Worldwide attention was drawn to the Sahel . . . 20 years ago as a result of successive years of devastating drought. In order to deal with the march of the deserts, many projects were proposed, including the creation of a "green wall." Fashioned after the shelter belts in the Great Plains of the United States in response to the Dust Bowl days, some scientists proposed the planting of millions of trees across the northern and southern edges of the Sahara to stop the desert's expansion.

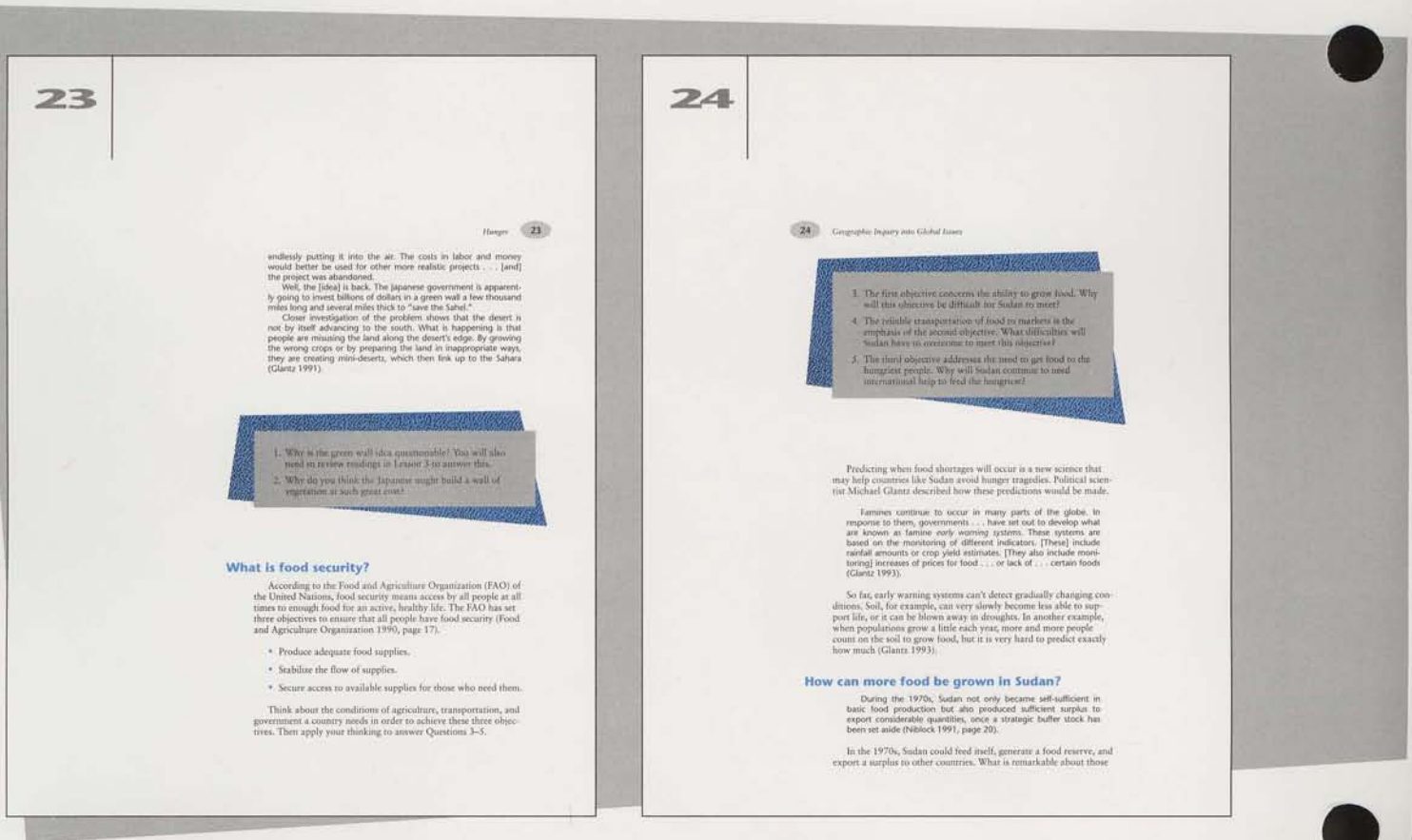
Many scientists attacked the scheme as unrealistic, saying the trees would act like wicks, sucking moisture from the ground and

Procedures

What is the "green wall" for Africa? (pages 22–23)

A. Tell students that they will now examine various ways in which Sudan can work on its hunger problem. Divide the class into small groups and distribute **Mini-Atlas map 5** to each group. After the groups have read the text, they can work on Questions 1 and 2 on page 23.

You may wish to point out that solutions to Sudan's hunger problem have to be tailored to the country's *combination* of hunger causes. What ties the problems and solutions together is the concept of geographic scale, which will be explored in Lesson 7. For now, concentrate on the importance of seeing the combination of factors causing hunger. Note that solutions begin with identifying problems.



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Hunger 23

endlessly putting it into the air. The costs in labor and money would better be used for other more realistic projects . . . [and] the project was abandoned.

Well, the [idea] is back. The Japanese government is apparently going to invest billions of dollars in a green wall a few thousand miles long and several miles thick to "save the Sahel."

Closer investigation of the problem shows that the desert is not by itself advancing to the south. What is happening is that people are misusing the land along the desert's edge. By growing the wrong crops or by preparing the land in inappropriate ways, they are creating *mini-deserts*, which then link up to the Sahara (Glantz 1991).

1. Why is the green wall idea questionable? You will also need to review readings in Lesson 3 to answer this.
2. Why do you think the Japanese might build a wall of vegetation at such great cost?

What is food security?

According to the Food and Agriculture Organization (FAO) of the United Nations, food security means access by all people at all times to enough food for an active, healthy life. The FAO has set three objectives to ensure that all people have food security (Food and Agriculture Organization 1990, page 17).

- Produce adequate food supplies.
- Stabilize the flow of supplies.
- Secure access to available supplies for those who need them.

Think about the conditions of agriculture, transportation, and government a country needs in order to achieve these three objectives. Then apply your thinking to answer Questions 3–5.

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3. The first objective concerns the ability to grow food. Why will this objective be difficult for Sudan to meet?
4. The reliable transportation of food to markets is the emphasis of the second objective. What difficulties will Sudan have to overcome to meet this objective?
5. The third objective addresses the need to get food to the hungriest people. Why will Sudan continue to need international help to feed the hungriest?

Predicting when food shortages will occur is a new science that may help countries like Sudan avoid hunger tragedies. Political scientist Michael Glantz described how these predictions would be made.

Famines continue to occur in many parts of the globe. In response to them, governments . . . have set out to develop what are known as famine *early warning systems*. These systems are based on the monitoring of different indicators. [These] include rainfall amounts or crop yield estimates. [They also include monitoring] increases of prices for food . . . or lack of . . . certain foods (Glantz 1993).

So far, early warning systems can't detect gradually changing conditions. Soil, for example, can very slowly become less able to support life, or it can be blown away in droughts. In another example, when populations grow a little each year, more and more people count on the soil to grow food, but it is very hard to predict exactly how much (Glantz 1993).

How can more food be grown in Sudan?

During the 1970s, Sudan not only became self-sufficient in basic food production but also produced sufficient surplus to export considerable quantities, once a strategic buffer stock has been set aside (Niblock 1991, page 20).

In the 1970s, Sudan could feed itself, generate a food reserve, and export a surplus to other countries. What is remarkable about those

Questions and Answers for page 23

1. Why is the green wall idea questionable? You will also need to review readings in Lesson 3 to answer this.
   - There are at least three reasons why a green wall would be difficult to grow.
     a. Ecological: Students can use Mini-Atlas map 5 to note that the natural vegetation of Sudan is grassland and desert. It is unknown how trees would affect these present ecosystems, but clearly the water demands of trees would be greater. Planting millions of trees would draw upon already depleted groundwater, leaving less for wells and irrigation pumps. A green wall is not a good response to desertification, because the cause of the deserts' spread was people trying to farm on marginal land, not deforestation.
     b. Economic: The Japanese would invest billions of dollars to build the wall, but such an outlay of funds may not exist in later years to maintain it. Also, it could be argued that this money would be better spent in food relief and in the construction and development of economic ventures that would enable Sahelian countries to provide for their own economic future.
     c. Political: In the face of continuing civil war and political turmoil in many Sahelian countries like Sudan, it would be inadvisable to spend so much money on a project that could be easily used by political groups as a weapon or threat to others. A politically stable situation would be a prerequisite for the green wall and such a situation can only come about if there is economic security.

2. Why do you think the Japanese might build a wall of vegetation at such great cost?
   - It may strike students as curious that the Japanese would get so involved in African affairs, as opposed to someplace closer to home. An appropriate answer would address what the Japanese would hope to gain from aid to Africa. International prestige is important to Japan but so is an economic return. Perhaps the green wall is an attempt to secure a long-term interest in African food production. If parts of the Sahel can eventually produce a surplus, African countries may be persuaded to sell that surplus to Japan at reasonable prices. Japan itself has little arable land on which to grow food for its large population.

What is food security? (pages 23–24)

B. Ask students if they are aware of the concept of financial security. Call for students to estimate how much money they would need to feel financially secure. The concept of food security is somewhat similar to financial security. After groups review the three objectives of the Food and Agriculture Organization, have them answer Questions 3–5. Discuss these with the class or have groups present their answers to other students.

Questions and Answers for page 24

3. The first objective concerns the ability to grow food. Why will this objective be difficult for Sudan to meet?
   - Students may first recognize that food production means having the necessary water, seeds, tractors, and chemicals to grow food. Like all three goals, these identify important needs but do not address how a country or region actually can ensure production. Can the government ensure production by force? Can business ensure production through economic means? These supplementary questions can help direct student discussion. Suggest that the answers will differ among countries or regions, and there is no one solution to ensure production.

4. The reliable transportation of food to markets is the emphasis of the second objective. What difficulties will Sudan have to overcome to meet this objective?
   - By referring to Mini-Atlas map 5, students can note that Sudan lacks the roads and rail lines that are essential to achieving this objective. This lack of necessary infrastructure is common in the developing world. Infrastructure must be built along with the needed vehicles—and all this costs money, perhaps more than any poor country can raise.

5. The third objective addresses the need to get food to the hungriest people. Why will Sudan continue to need international help to feed the hungriest?
   - It doesn't appear the civil war will stop anytime soon, so international relief will be needed until Sudan can grow food on its own and reduce the fighting that interferes with food aid shipments. Above all, it will take years, if not decades, to reinvigorate the Sudanese economy.

C. Have students read the text following Questions 3–5 on page 24. A key to food security is improving the early-warning signs of famines. The quote from Glantz will help students understand how an early-warning system works.

Divide the class into groups of six students. Each group's goal is to design a program that will help Sudan gain food security. In each group, have two students argue for the value of early-warning systems. Have two other students provide arguments in favor of ways to prevent famines instead of detecting them. Have the third pair of students present an argument in favor of famine relief instead of detection or prevention. Encourage each group to seek consensus on their goals and present this to the rest of class. You may want to assign this exercise in advance of the class to permit students time to collect information.

For younger students, skip the debate and focus discussion on the idea that there are at least three ways to improve

food security: detection, prevention, and famine relief. Have students consider the advantages and disadvantages of all three. [The main point is that prevention seeks to address the problem at its source; famine relief is geared toward alleviating an existing problem; and detection seeks to alleviate the problem before it becomes severe.]

How can more food be grown in Sudan? (pages 24–25)

How could a political solution ease the problem of hunger? (page 26)

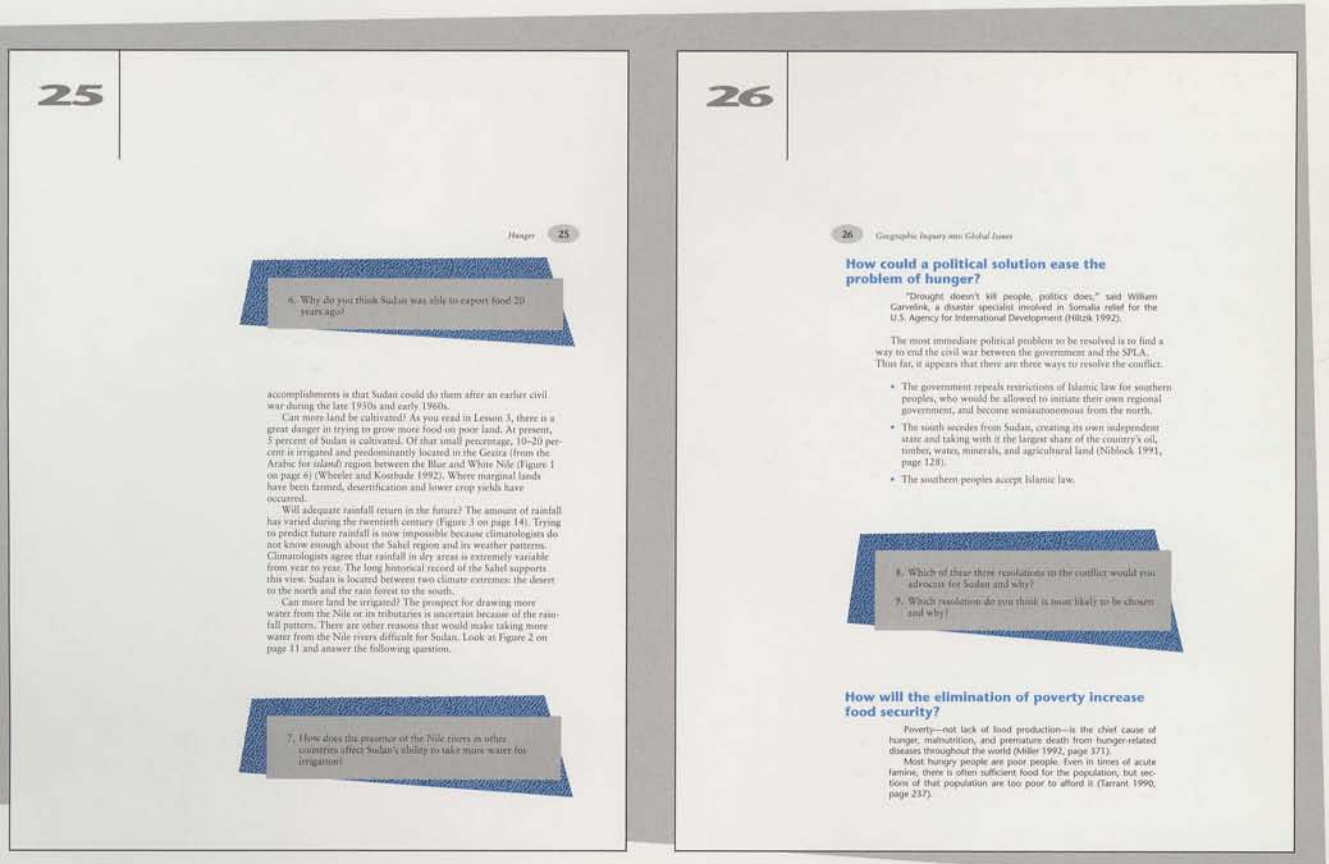
How will the elimination of poverty increase food security? (pages 26–27)

D. Divide the class into small groups of three or four students. Tell the groups that they will be acting as United Nations consultants for the next activity, and their goal is to come up with recommendations to answer the lesson question, "How can Sudan gain food security?"

Have the groups read these three sections, which deal in turn with agricultural, political, and economic impediments to Sudan's food security. After reading and discussing the material, groups can develop their recommendations for bringing food security to Sudan.

Post sheets of butcher paper in the front of the classroom. Have a representative from each group write their suggestions on the butcher paper. After each group presents their ideas, the remainder of the class can debate which proposals are the best and take a vote. Consider having students videotape the group presentations.

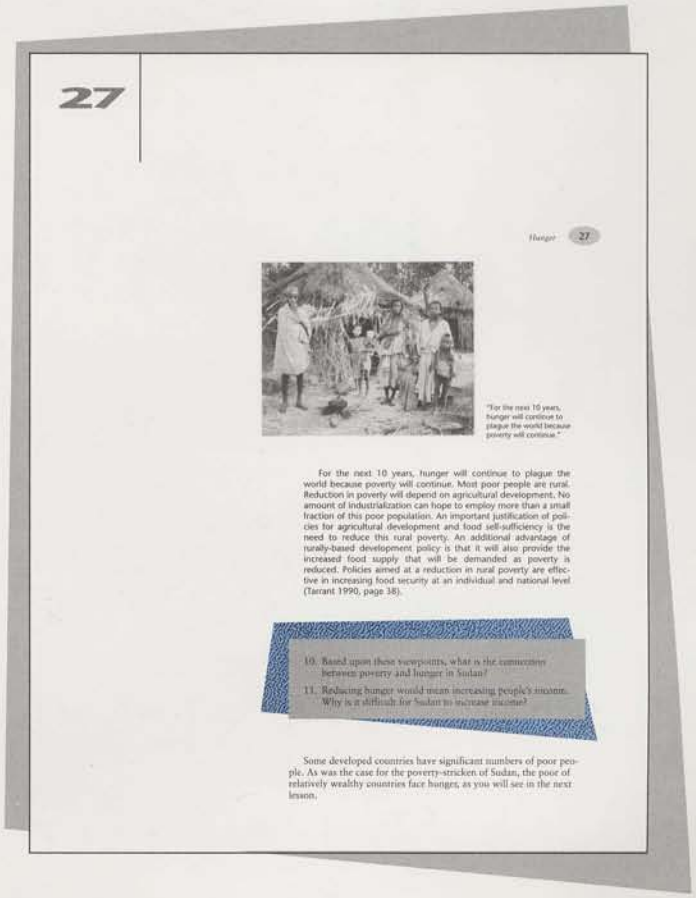
E. Discuss Questions 6–11 (pages 25–27) with the class (or have groups write answers to these). You may wish to make the following



points about Sudan's agricultural, political, and economic problems:

- The section "How can more food be grown in Sudan?" presents an irony of food production and hunger found in much of the developing world. That Sudan has, in the past, exported food and now cannot highlights the devastating effects of drought and civil war. As in any desert, rainfall is unpredictable and uncontrollable. What people can control are their own affairs. Emphasize this aspect of the Sudanese hunger crisis—that hunger is controllable, even in the Sahel, if people cooperate.
- As groups review the three ways to resolve the Sudanese civil war (page 26), explain that most southern Sudanese actually prefer the first resolution over secession, the second resolution. Students may expect that such conflicts today are resolved by creating new countries, as happened in the former Soviet Union and Czechoslovakia. Historically, this has not always been the case. Some countries (e.g., Canada and Belgium) continue to exist peacefully with different ethnic groups.
- You may wish to spend time discussing the section on poverty (pages 26–27) to close the Sudan case study. By now, students will recognize that hunger is a complex issue. Many suggestions to end hunger offer only a statement on the need to reduce poverty. For developed nations, this may be a worthwhile and relevant strategy, but for developing nations, it is simplistic. Reducing poverty in developing nations demands long-term economic development. This requires the identification of profitable resources, the means to develop them, and the financial aid to start development. These are not simple needs.

Encourage students to recall that, for regional-scale hunger, the level of economic development is related to the prevalence of hunger (as seen graphically on Mini-Atlas maps 1 and 2 in Lesson 1). But for economic development to proceed in Sudan and similar places, civil war must stop and a rational plan must be implemented for dealing with recurrent natural hazards like drought. Students may correctly point out that there are hungry people in wealthy countries. That topic is covered in the next lesson, a case study of Canada.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Hunger 27

"For the next 10 years, hunger will continue to plague the world because poverty will continue."

For the next 10 years, hunger will continue to plague the world because poverty will continue. Most poor people are rural. Reduction in poverty will depend on agricultural development. No amount of industrialization can hope to employ more than a small fraction of this poor population. An important justification of policies for agricultural development and food self-sufficiency is the need to reduce this rural poverty. An additional advantage of rurally-based development policy is that it will also provide the increased food supply that will be demanded as poverty is reduced. Policies aimed at a reduction in rural poverty are effective in increasing food security at an individual and national level (Tarrant 1990, page 38).

10. Based upon these viewpoints, what is the connection between poverty and hunger in Sudan?
11. Reducing hunger would mean increasing people's income. Why is it difficult for Sudan to increase income?

Some developed countries have significant numbers of poor people. As was the case for the poverty-stricken of Sudan, the poor of relatively wealthy countries face hunger, as you will see in the next lesson.

Questions and Answers for pages 25–27

6. Why do you think Sudan was able to export food 20 years ago?
   - Twenty years ago Sudan had a surplus of food. In the 1970s, before the civil war, Sudan's economy was more stable. Also, rainfall was more dependable, allowing for more food production.

7. How does the presence of the Nile rivers in other countries affect Sudan's ability to take more water for irrigation?
   - First, students may note that the Blue Nile, White Nile, and the Nile all flow from south to north. Water enters Sudan from other countries that may take water for themselves. These countries are also poor and affected by drought and are also looking at the option of greater irrigation to reduce hunger. And although Egypt is downriver from Sudan, an international agreement has assured Egypt a certain percentage of Nile water that can never decrease. Should Sudan attempt to draw more than they are allowed by this agreement, there could be serious political conflict between the two countries.

8. Which of these three resolutions to the conflict would you advocate for Sudan and why?
   - There is no correct answer to this. Encourage a thoughtful response that defends and provides evidence for the choice made. Ask students if their answer would change if they were from northern or southern Sudan.

9. Which resolution do you think is most likely to be chosen and why?
   - The second and third options are the least likely to resolve the conflict. The southern peoples will not accept Islam unless they are totally defeated and forced to accept Islam. The creation of a new state is unlikely because even though the south has a good resource base, it lacks the money and infrastructure to succeed on its own. Even SPLA leaders do not want to secede, in part due to these economic difficulties. The favored solution by the SPLA and the international community involves granting limited autonomy to non-Muslim peoples in southern Sudan. If those peoples had more political and economic control, the civil war could end. The Muslim north would still maintain rule and continue to receive taxes and other revenues from the south, but would agree that southern peoples not have Islam imposed on them.

10. Based upon these viewpoints, what is the connection between poverty and hunger in Sudan?
    - Student responses may reiterate all of the reasons stated in previous lessons. In a country that is enduring a civil war, confronted with variable precipitation, a poor infrastructure, and a poor economy, remedying poverty is a tall order indeed and no solution by itself.

continued

11. Reducing hunger would mean increasing people's income. Why is it difficult for Sudan to increase income?

    - There are several responses that would be appropriate here: (a) the immediate effects of civil war; (b) a lack of money to build new businesses that could give people jobs; and (c) without an adequate road or rail system, good sanitation, or a communication network, developing new economic ventures would be difficult.

For Further Inquiry

- The viewpoints quoted in the Student DataBook are meant to reinforce previous sections in this lesson that identified politics and economics as variables that need to be considered in reducing hunger. These are strongly worded and definitive-sounding statements indicative of the view held by many policymakers and the general public. Have students analyze these statements for bias. How is language being used to make a point and to persuade people?
- Have students collect quotes and create a bulletin board that displays the world's attitude about world hunger. They could divide the board into categories such as descriptions, ideas for solutions, hopeful quotes, official policies regarding hunger, and places where hunger exists.

Lesson 5

Why is there hunger in Canada?

Time Required

One 50-minute class period

Materials Needed

Copies of Activity 4 for each group of students

Glossary Words

food bank

scale

welfare

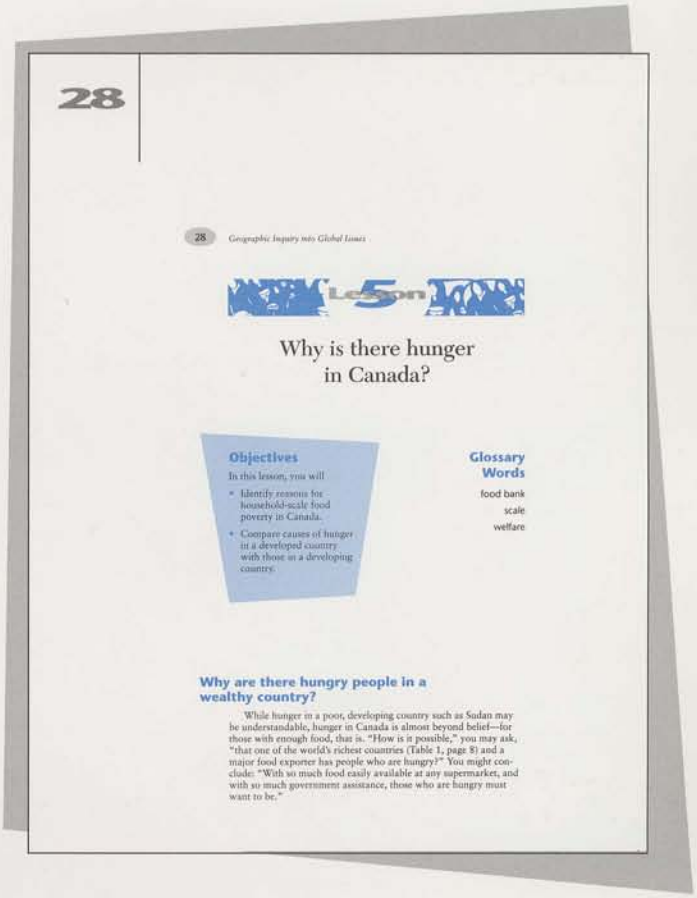
Getting Started

- Begin with a short class discussion, asking students to think of ways in which Canada and the United States are similar and ways in which they are different.
- Ask students whether hunger is a problem in the United States. Canada and the United States are similar countries according to many social, economic, and political indexes. Tell students that they will look at why there are hungry people in Canada—a country with no civil war, no recurrent cycle of drought, a well-developed infrastructure, a strong economy, and a social welfare system. Have students locate Toronto on a world map; it is the locale of the following case study.

Procedures

Why are there hungry people in a wealthy country? (pages 28–30)

A. Have students read the brief case study about the Canadian family and open class discussion. Focus class discussion on the differences and similarities of the two case studies explored thus far (Sudan and Canada). The story of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28 Geographic Inquiry into Global Issues

Lesson 5

Why is there hunger in Canada?

Objectives

In this lesson, you will

- Identify reasons for household-scale food poverty in Canada.
- Compare causes of hunger in a developed country with those in a developing country.

Glossary Words

food bank

scale

welfare

Why are there hungry people in a wealthy country?

While hunger in a poor, developing country such as Sudan may be understandable, hunger in Canada is almost beyond belief—for those with enough food, that is. "How is it possible," you may ask, "that one of the world's richest countries (Table 1, page 8) and a major food exporter has people who are hungry?" You might conclude: "With so much food easily available at any supermarket, and with so much government assistance, those who are hungry must want to be."

Jessica's hunger may be easier for students to relate to than the Sudanese story because the plight of the homeless has been given considerable media attention. Although Jessica and Sue are not homeless, thanks to Canadian public assistance programs, they often find it hard to make ends meet.

Divide the class into groups to answer Questions 1–4 on page 30, or discuss these with the class as a whole.

Questions and Answers for page 30

1. How are the causes of Jessica's hunger different from the causes of Angelo Chol's hunger in Lesson 1?
   - Jessica lacks food from time to time primarily because her family cannot earn enough money to pay all expenses. Until Sue finds a job that pays better than government assistance, poverty will keep Jessica and her family occasionally hungry. Angelo is hungry because of the widespread economic and political problems of civil war combined with periodic years of drought.

2. If given the choice, would you accept poverty-level wages or go on welfare?
   - After students have given their reasons for their choice (which you may wish to list on the board), suggest the following scenarios and see if their opinion changes.

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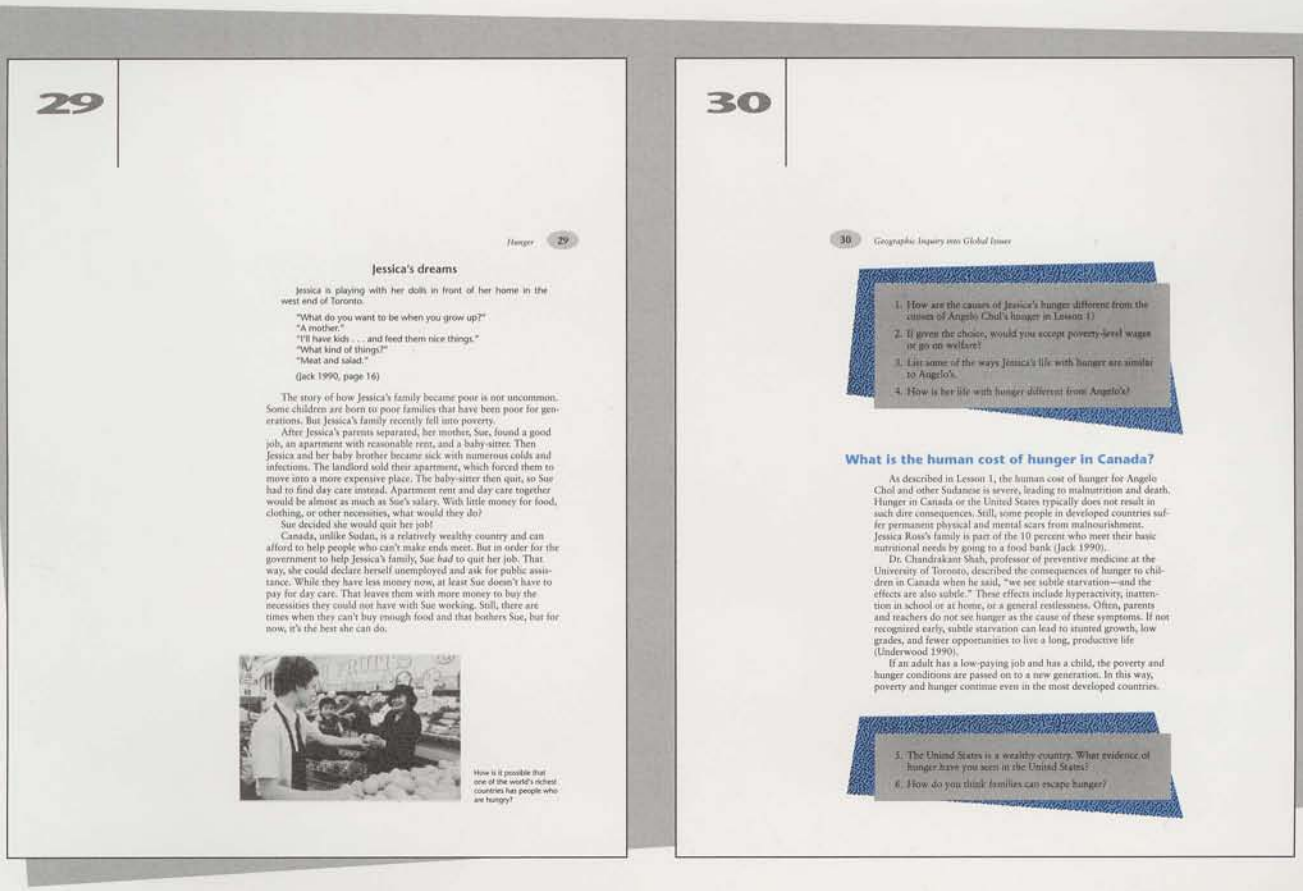

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Hunger 29

Jessica's dreams

Jessica is playing with her dolls in front of her home in the west end of Toronto.

"What do you want to be when you grow up?"
"A mother."
"I'll have kids . . . and feed them nice things."
"What kind of things?"
"Meat and salad."

(Jack 1990, page 16)

The story of how Jessica's family became poor is not uncommon. Some children are born to poor families that have been poor for generations. But Jessica's family recently fell into poverty.

After Jessica's parents separated, her mother, Sue, found a good job, an apartment with reasonable rent, and a baby-sitter. Then Jessica and her baby brother became sick with numerous colds and infections. The landlord sold their apartment, which forced them to move into a more expensive place. The baby-sitter then quit, so Sue had to find day care instead. Apartment rent and day care together would be almost as much as Sue's salary. With little money for food, clothing, or other necessities, what would they do?

Sue decided she would quit her job!

Canada, unlike Sudan, is a relatively wealthy country and can afford to help people who can't make ends meet. But in order for the government to help Jessica's family, Sue *had* to quit her job. That way, she could declare herself unemployed and ask for public assistance. While they have less money now, at least Sue doesn't have to pay for day care. That leaves them with more money to buy the necessities they could not have with Sue working. Still, there are times when they can't buy enough food and that bothers Sue, but for now, it's the best she can do.

How is it possible that one of the world's richest countries has people who are hungry?

30

30 Geographic Inquiry into Global Issues

1. How are the causes of Jessica's hunger different from the causes of Angelo Chol's hunger in Lesson 1?
2. If given the choice, would you accept poverty-level wages or go on welfare?
3. List some of the ways Jessica's life with hunger are similar to Angelo's.
4. How is her life with hunger different from Angelo's?

What is the human cost of hunger in Canada?

As described in Lesson 1, the human cost of hunger for Angelo Chol and other Sudanese is severe, leading to malnutrition and death. Hunger in Canada or the United States typically does not result in such dire consequences. Still, some people in developed countries suffer permanent physical and mental scars from malnourishment. Jessica Ross's family is part of the 10 percent who meet their basic nutritional needs by going to a food bank (Jack 1990).

Dr. Chandrakant Shah, professor of preventive medicine at the University of Toronto, described the consequences of hunger to children in Canada when he said, "we see subtle starvation—and the effects are also subtle." These effects include hyperactivity, inattention in school or at home, or a general restlessness. Often, parents and teachers do not see hunger as the cause of these symptoms. If not recognized early, subtle starvation can lead to stunted growth, low grades, and fewer opportunities to live a long, productive life (Underwood 1990).

If an adult has a low-paying job and has a child, the poverty and hunger conditions are passed on to a new generation. In this way, poverty and hunger continue even in the most developed countries.

5. The United States is a wealthy country. What evidence of hunger have you seen in the United States?
6. How do you think families can escape hunger?

a. If you accept poverty-level wages, you may have the chance of working your way up in an organization, eventually getting the kind of job and wage you want—if you can wait several years.
b. If you go on welfare, you may have the possibility of going back to school, earning a degree, a job skill, or other abilities to make you more employable.

In either case, the situation is not hopeless, as one can plan to move out of welfare or poverty. Too often, of course, despair takes the place of action as the individual feels overwhelmed by the situation. This, too, is a toll of hunger.

A related issue that older students may bring up is the role of the father and the breakup of the family. The scant information given in Jessica's story reveals little about her father, but it may be assumed he is unwilling or unable to help. Female-headed households in the United States and Canada are rapidly increasing for various reasons. Explore this issue further with students if interest warrants.

3. List some of the ways Jessica's life with hunger is similar to Angelo's.

- Both children have times in which they go without food and must face the physical and emotional consequences of hunger. They also face uncertainty about their future and think about food more often than other children.

4. How is her life with hunger different from Angelo's?

- For Jessica, periods of hunger are less pronounced and fewer in number than those for Angelo. Also, her home life is more stable in other respects (such as no civil war), which may allow her to experience less stress in her life. Her future is also more optimistic than Angelo's because she lives in a country that potentially could provide her more opportunities to escape poverty and hunger.

B. Having answered these questions, students may see how Canada's hunger problem differs from Sudan's. Guide class discussion to emphasize the differences in *scale* between the hunger issue in Canada and Sudan. [The scale of hunger now being described is on the household or family level, because there is not widespread hunger, civil war, or a devastated economy in Canada. Household-scale hunger is more subtle in its causes than the regional-scale hunger experienced in Sudan.]

What is the human cost of hunger in Canada? (page 30)

C. Ask students the following questions: Have you ever skipped breakfast before going to school? Or, have you ever skipped lunch? If you did, do you remember how you felt trying to study or pay attention in class? Now, imagine what that would be like half of the days of every week, month after month.

This is the situation many children in Canada and the United States face in coping with hunger. The effects of prolonged undernourishment are described in the Student DataBook. Discuss this text with the class and have groups work on Questions 5 and 6 to reinforce the idea that hunger also exists in the United States. Give groups a chance to generate creative solutions. [Both the causes and effects of household-scale hunger are subtle. For students, these hard-to-detect effects of hunger may not seem important, and their own career aspirations might also be a very distant concern. However, students do know what it is like to skip meals and they may realize that persistent undernourishment can lead to an unhappy life because it keeps people from achieving what they want.]

Questions and Answers for page 30

5. The United States is a wealthy country. What evidence of hunger have you seen in the United States?
   - Encourage responses based on media sources or other classroom activities. If possible, have students cite examples drawn from the local community.

6. How do you think families can escape hunger?
   - If household food poverty is the cause, it would be reasonable to assume that a good job at a good wage would be necessary for relief from hunger. Until that happens for an individual family, it will continue to depend on government and other outside sources of assistance for food.

D. Distribute copies of **Activity 4** to each group. Have groups fill in Activity 4 for Jessica Ross in the same manner they did for Angelo Chol on Activity 3. Again, be sure groups keep their lists for further examination in Lesson 7.

For Further Inquiry

In both the United States and Canada, the problem of hunger in indigenous communities is particularly acute. Students may wish to investigate the living conditions on Native American reservations in both countries. For such groups, the rates of both poverty and hunger are above national averages: 51 percent of native Canadian children live below the poverty line, yet they represent only 2 percent of Canada's children (Jack 1990).

Lesson 6

Why is there hunger in India?

Time Required

One 50-minute class period

Materials Needed

Copies of Activity 5 for each group of students

Glossary Words

calorie

discrimination

famine

gender

Getting Started

- A major concept in this lesson is *discrimination.* Have students identify examples of discrimination, define the term based on their examples, and compare their definition to the one found in the Student DataBook's Glossary.
- Tell students that they will now look at a hunger situation in which one group of people is favored over another. In the first case study, food shortages were widespread across an entire region of Sudan. In Canada, family poverty was shown to be a reason for hunger in some households despite the availability of food in the country as a whole. Now, in the India case, students examine an example of uneven food distribution *within* families. Discrimination based on age and gender means that some members of Indian families are allowed to go hungry while others get food. Millions of people in India (as well as China and other Asian countries) go without food for some periods of time due to age and gender discrimination within families.

Note: Although this lesson highlights the individual-scale level of hunger, all three scales of hunger are found in India. Be sure students understand that age and gender discrimination are not the only reasons for hunger in India. The household level (akin to the Canada case) is also a factor due to the legacy of the old Hindu caste system, in which opportunities for some groups were severely restricted. The potential for regional food shortages (as in Sudan) exists where ethnic hostilities have broken out (in the northwest between Hindus and Muslims and in the southeast where Tamil separatists are fighting the government).

Procedures

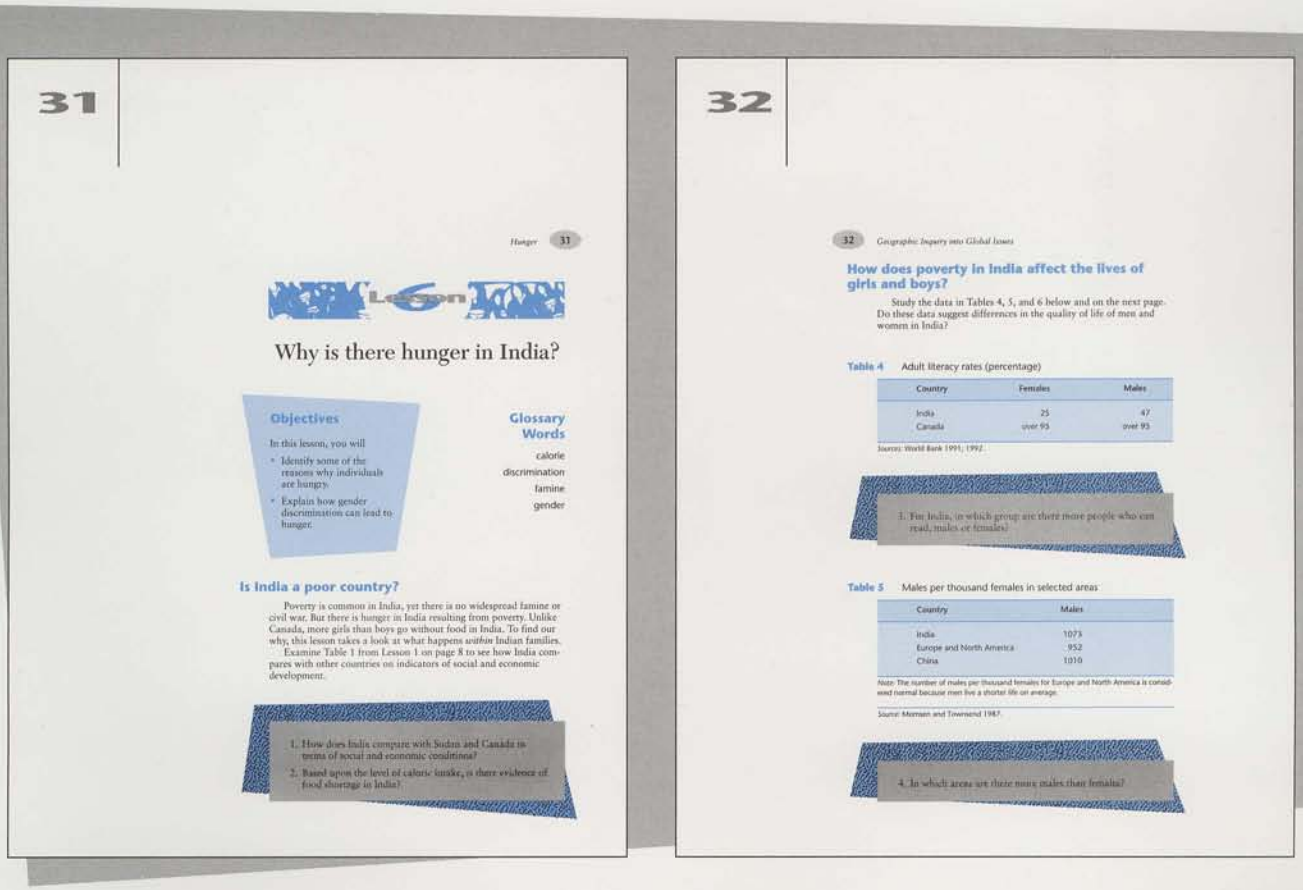
Is India a poor country? (page 31)

A. Divide the class into small groups. By reviewing Table 1 on page 8, students can establish that India is a poor country on a par with Sudan. Ask for student perceptions of life in India. Explain that compared to Sudan, India does not suffer from regional famine. Have students answer Questions 1 and 2.

Questions and Answers for page 31

1. How does India compare with Sudan and Canada in terms of social and economic conditions?
   - From Table 1, groups can see that, by the numbers, India generally has more in common with Sudan than with Canada. They may also note that with the exception of GNP, the numbers are a bit better for India than Sudan.

2. Based upon the level of caloric intake, is there evidence of food shortage in India?
   - Students may recall from Lesson 1 that the minimum number of calories needed to maintain life was 2,360 per day and India comes very close to that number. This indicates that while they live on the edge of food shortage, most Indians probably get enough food.



31

Hunger 31

Lesson 2

Why is there hunger in India?

Objectives

In this lesson, you will

- Identify some of the reasons why individuals are hungry.
- Explain how gender discrimination can lead to hunger.

Glossary Words

calorie
discrimination
famine
gender

Is India a poor country?

Poverty is common in India, yet there is no widespread famine or civil war. But there is hunger in India resulting from poverty. Unlike Canada, more girls than boys go without food in India. To find out why, this lesson takes a look at what happens *within* Indian families.

Examine Table 1 from Lesson 1 on page 8 to see how India compares with other countries on indicators of social and economic development.

1. How does India compare with Sudan and Canada in terms of social and economic conditions?
2. Based upon the level of caloric intake, is there evidence of food shortage in India?

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32 Geographic Inquiry into Global Issues

How does poverty in India affect the lives of girls and boys?

Study the data in Tables 4, 5, and 6 below and on the next page. Do these data suggest differences in the quality of life of men and women in India?

Table 4 Adult literacy rates (percentage)

Country	Females	Males
India	25	47
Canada	over 95	over 95

Source: World Bank 1991; 1992.

3. For India, in which group are there more people who can read, males or females?

Table 5 Males per thousand females in selected areas

Country	Males
India	1073
Europe and North America	952
China	1010

Note: The number of males per thousand females for Europe and North America is considered normal because men live a shorter life on average.

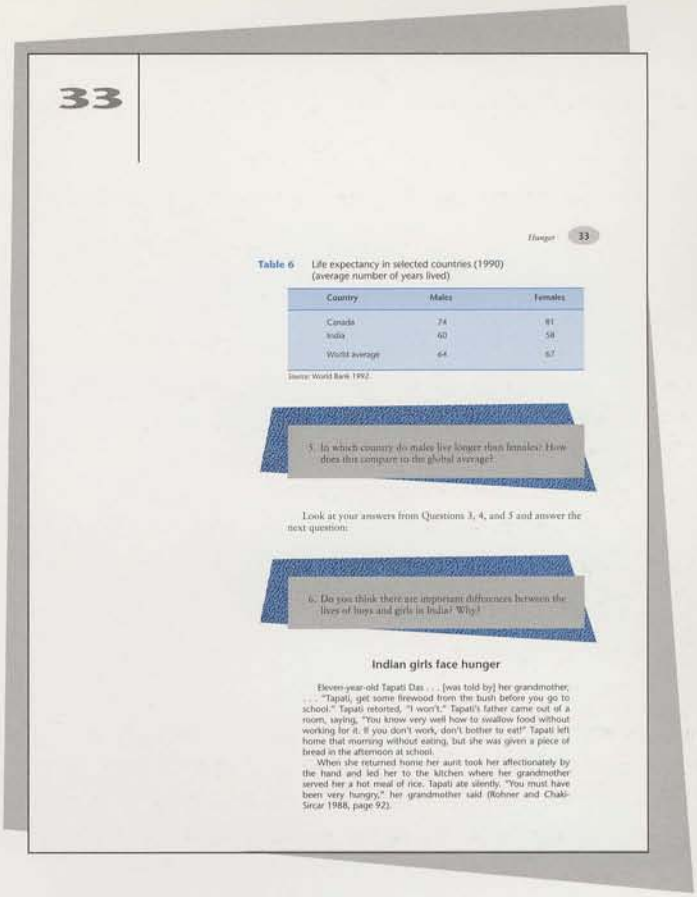
Source: Momsen and Townsend 1987.

4. In which areas are there more males than females?

How does poverty in India affect the lives of girls and boys? (pages 32–35)

B. First have groups analyze Tables 4, 5 and 6 on pages 32–33 and draw conclusions for Questions 3–6 from these data.

If necessary, explain the meaning of *literacy* (Table 4) and the ratio *males per thousand females* (Table 5). Literacy is the percentage of the total population that can read. The reading level, however, varies among different countries, making this a rough indicator. As shown in Table 5, India is far above a 1 to 1 ratio of males to females. And as the table notes, it is expected that there should actually be *more* women than men because of differences in life expectancy. This shows that there are many more males than females in India than would be expected in an average human population. [Taken together, Tables 4–6 suggest that the quality of life for females is poorer than for males in India.]



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Hunger 33

Table 6 Life expectancy in selected countries (1990) (average number of years lived)

Country	Males	Females
Canada	74	81
India	60	58
World average	64	67

Source: World Bank 1992.

5. In which country do males live longer than females? How does this compare to the global average?

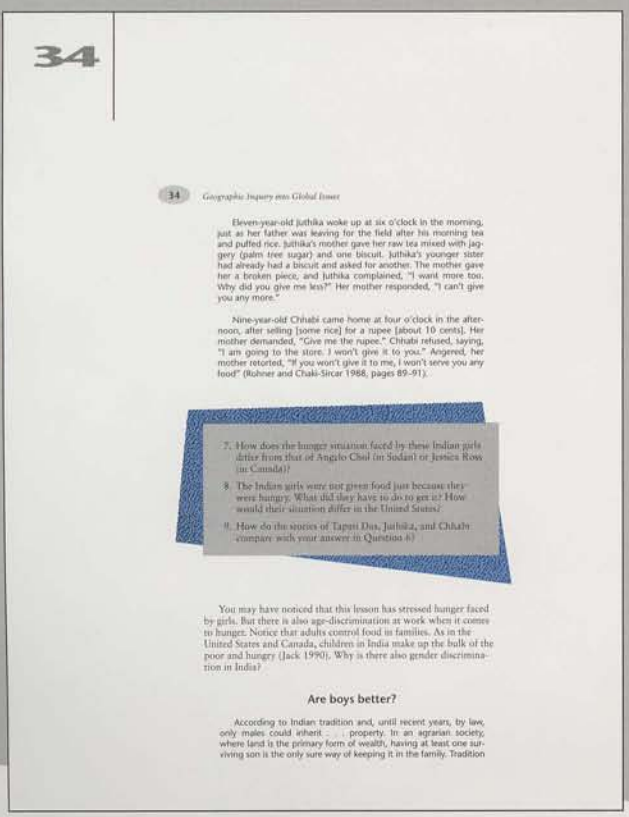
Look at your answers from Questions 3, 4, and 5 and answer the next question:

6. Do you think there are important differences between the lives of boys and girls in India? Why?

Indian girls face hunger

Eleven-year-old Tapati Das . . . [was told by] her grandmother, . . . "Tapati, get some firewood from the bush before you go to school." Tapati retorted, "I won't." Tapati's father came out of a room, saying, "You know very well how to swallow food without working for it. If you don't work, don't bother to eat!" Tapati left home that morning without eating, but she was given a piece of bread in the afternoon at school.

When she returned home her aunt took her affectionately by the hand and led her to the kitchen where her grandmother served her a hot meal of rice. Tapati ate silently. "You must have been very hungry," her grandmother said (Rohner and Chaki-Sircar 1988, page 92).



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Eleven-year-old Juthika woke up at six o'clock in the morning, just as her father was leaving for the field after his morning tea and puffed rice. Juthika's mother gave her raw tea mixed with jaggery (palm tree sugar) and one biscuit. Juthika's younger sister had already had a biscuit and asked for another. The mother gave her a broken piece, and Juthika complained, "I want more too. Why did you give me less?" Her mother responded, "I can't give you any more."

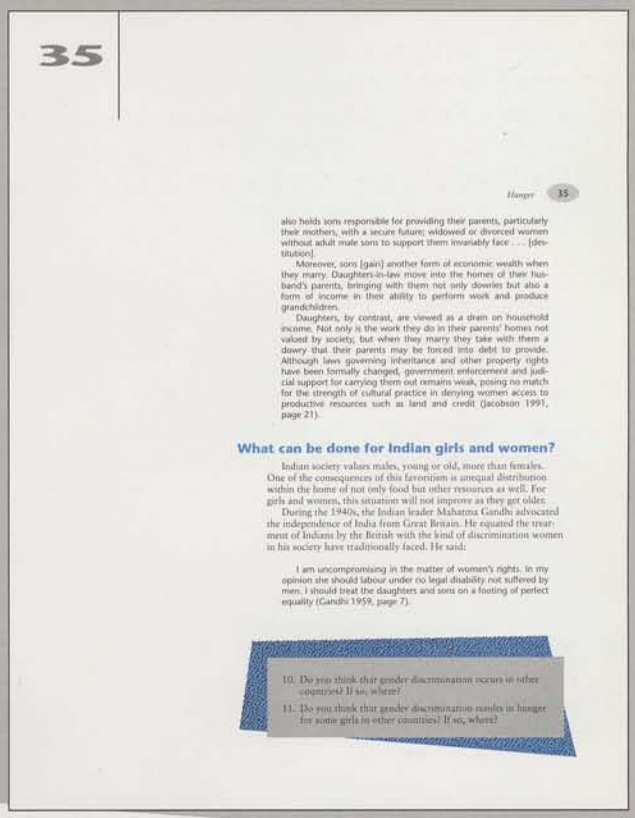
Nine-year-old Chhabi came home at four o'clock in the afternoon, after selling [some rice] for a rupee [about 10 cents]. Her mother demanded, "Give me the rupee." Chhabi refused, saying, "I am going to the store. I won't give it to you." Angered, her mother retorted, "If you won't give it to me, I won't serve you any food" (Rohner and Chaki-Sircar 1988, pages 89–91).

7. How does the hunger situation faced by these Indian girls differ from that of Angelo Chol (in Sudan) or Jessica Ross (in Canada)?
8. The Indian girls were not given food just because they were hungry. What did they have to do to get it? How would their situation differ in the United States?
9. How do the stories of Tapati Das, Juthika, and Chhabi compare with your answer in Question 6?

You may have noticed that this lesson has stressed hunger faced by girls. But there is also age-discrimination at work when it comes to hunger. Notice that adults control food in families. As in the United States and Canada, children in India make up the bulk of the poor and hungry (Jack 1990). Why is there also gender discrimination in India?

Are boys better?

According to Indian tradition and, until recent years, by law, only males could inherit . . . property. In an agrarian society, where land is the primary form of wealth, having at least one surviving son is the only sure way of keeping it in the family. Tradition



35

Hunger 35

also holds sons responsible for providing their parents, particularly their mothers, with a secure future; widowed or divorced women without adult male sons to support them invariably face . . . [destitution].

Moreover, sons [gain] another form of economic wealth when they marry. Daughters-in-law move into the homes of their husband's parents, bringing with them not only dowries but also a form of income in their ability to perform work and produce grandchildren.

Daughters, by contrast, are viewed as a drain on household income. Not only is the work they do in their parents' homes not valued by society, but when they marry they take with them a dowry that their parents may be forced into debt to provide. Although laws governing inheritance and other property rights have been formally changed, government enforcement and judicial support for carrying them out remains weak, posing no match for the strength of cultural practice in denying women access to productive resources such as land and credit (Jacobson 1991, page 21).

What can be done for Indian girls and women?

Indian society values males, young or old, more than females. One of the consequences of this favoritism is unequal distribution within the home of not only food but other resources as well. For girls and women, this situation will not improve as they get older.

During the 1940s, the Indian leader Mahatma Gandhi advocated the independence of India from Great Britain. He equated the treatment of Indians by the British with the kind of discrimination women in his society have traditionally faced. He said:

> I am uncompromising in the matter of women's rights. In my opinion she should labour under no legal disability not suffered by men. I should treat the daughters and sons on a footing of perfect equality (Gandhi 1959, page 7).

10. Do you think that gender discrimination occurs in other countries? If so, where?
11. Do you think that gender discrimination results in hunger for some girls in other countries? If so, where?

Questions and Answers for pages 32–33

3. For India, in which group are there more people who can read, males or females?
   - More males are literate, by nearly a 2 to 1 ratio.

4. In which areas are there more males than females?
   - India and China have more males than females. Remind students, if necessary, that those countries deviate from an expected distribution where, on a worldwide basis, there should be slightly more females than males. The unusual ratio of males to females in India is not due to chance, but due to other, presumably cultural, factors. One reported element of this is female infanticide—the deliberate killing of female babies. Other impacts of gender discrimination include the stories about hunger included in this lesson.

5. In which country do males live longer than females? How does this compare to the global average?
   - In another departure from typical demographic data, males live longer than females, on average, in India. Overall, Indians have a shorter life expectancy than the global average. Males live two years longer than females, but the global average is that females live three years longer than males. It is not likely that this is a statistical anomaly; again, cultural influences appear to be at work.

6. Do you think there are important differences between the lives of boys and girls in India? Why?
   - Students may simply restate the answers to Questions 3–5, but encourage them to make some general statement that summarizes the information. They may conclude that males "have it better" or are privileged for some reason. Encourage ties between the tables, such as more literate people in a society tend to live longer because they can get better jobs and more money. Ask students to speculate about why there is a higher literacy rate and life expectancy among males and why the population ratio is so unusual. The next section provides more information for students to answer this question.

C. The three stories of Indian girls ("Indian girls face hunger") and their problems with getting enough food are typical. Let students read these passages, then go on to Questions 7–9.

Questions and Answers for page 34

7. How does the hunger situation faced by these Indian girls differ from that of Angelo Chol (in Sudan) or Jessica Ross (in Canada)?

   - The emphasis here is on the implied discrimination in food distribution within families based on age and gender. What the three stories have in common is that all three cases involve female children. Tapati and the other Indian girls encounter hunger not because of civil war or poverty but for reasons that are not yet entirely clear. Students may need direction with this question because there is no simple declarative statement of discrimination based on age and gender. The girls' treatment is similar in that they must work for food or are given no reason for not getting food. Both of these hint at an attitude of neglect toward young girls in India.

8. The Indian girls were not given food just because they were hungry. What did they have to do to get it? How would their situation differ in the United States?

   - They must either work for food or they get no straight answer about their lack of food. Many U.S. children are given spending money or an allowance in return for work around the house. But U.S. children have more of a choice about an allowance and are often not forced to work for the good of the family.

9. How do the stories of Tapati Das, Juthika, and Chhabi compare with your answer in Question 6?

   - In each story you can find evidence of discriminatory treatment toward girls. This supports the idea that the quality of life is better for boys than for girls in India.

D. If the term *gender discrimination* is unfamiliar to students, discuss the idea that within poorer families in India, food is apportioned according to age and gender. Children receive food after adults; girls receive food after boys. The Student DataBook (page 34) asks students to consider why gender discrimination occurs.

Have students read the passage, "Are boys better?" This extract may be too advanced for some students but the title will elicit considerable discussion as it summarizes gender inequity in India. Help students summarize the text and point out critical sentences that emphasize the cultural reasons for preferential treatment of boys. Clarify the Indian custom of *dowry* if necessary.

What can be done for Indian girls and women? (page 35)

E. Close the lesson with a discussion based on this text. Many solutions begin with the identification of the problem. The leader of India's independence movement, Mahatma Gandhi, recognized the problem of gender discrimination. But he died before he could enact protective legislation for girls and women.

India has numerous laws protecting women, but there is no one statute for all rights accorded to women. The passage of laws thus far has not wiped out female discrimination, so the likelihood of future legislation is unclear. More importantly, there are centuries of cultural practices that would have to be overcome in order to improve the status of girls and women in Indian society.

Discuss Questions 10 and 11 to help students see the extent of gender discrimination in other parts of the world.

Questions and Answers for page 35

10. Do you think that gender discrimination occurs in other countries? If so, where?
    - Gender discrimination can be found in nearly all societies, so encourage students to be geographically specific. Most students will answer with the United States, and indeed, instances of gender discrimination are legion, especially in the U.S. workplace. If students answer with another country, have them share what they know about that country's gender discrimination.

11. Do you think that gender discrimination results in hunger for some girls in other countries? If so, where?
    - Students will likely say *yes* to this question, given the nature of the lesson. If they have trouble coming up with a specific example, have them refer to Table 5 again so that students can identify China as another likely country where hunger from gender discrimination exists.

F. Distribute copies of **Activity 5** to each group of students. As before, have groups complete the Activity, this time considering the case of Tapati Das. Students can brainstorm a list of reasons for hunger found in her story, as they have done for Angelo Chol (Sudan) and Jessica Ross (Canada) in preceding lessons. Groups will need to retain all three completed Activity sheets (Activities 3–5) for Lesson 7.

Lesson 7

What can be done about hunger?

Time Required

Two 50-minute class periods

Materials Needed

Butcher paper
Copies of Activity 6 for all students
Copies of Activity 7 for each group of students

Glossary Words

discrimination

food deprivation

food poverty

gender

scale

Getting Started

- See what students think about the issue of world hunger so far. Have students write down ideas of what can be done to help solve the hunger problem. They can swap papers with a neighbor student and then report orally to the rest of the class. Write down some of these ideas on the chalkboard or on a sheet of butcher paper. Save this information to compare with responses students develop at the conclusion of this lesson.
- Have student groups review their responses to Activities 3, 4, and 5 (reasons for hunger for Angelo Chol, Jessica Ross, and Tapati Das) to search for clues to understand why hunger exists and what may be done about hunger. Explain to students that to find clues, they could use a "map" that shows hunger at different scales. Such a general roadmap of hunger, as laid out by geographer Robert Kates, is described in this lesson on pages 37–41. The Activities students will use in this lesson guide them to discover the reasons for world hunger.

Procedures

Why is the concept of scale important? (pages 36–37)

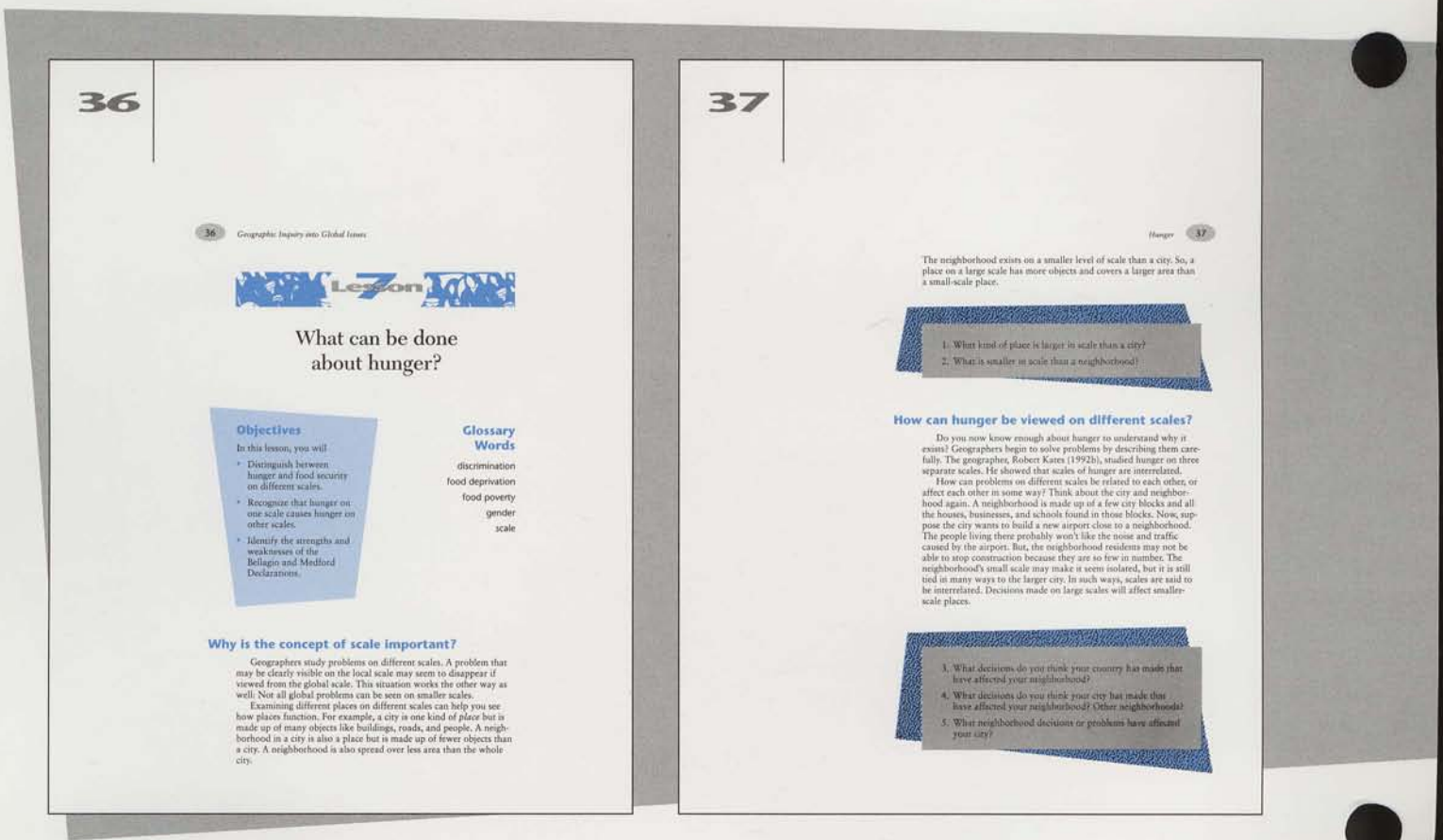
A. Have groups read the short text and answer Questions 1–2, which are designed to give students more familiarity with the concept of scale. Be sure students understand that larger-scale phenomena incorporate the smaller scales.

> Older students may not need this much background about the concept of scale. If so, skip to Procedure B.

Questions and Answers for page 37

1. What kind of place is larger in scale than a city?
   - Responses could include places such as a county, state, country, or continent.

2. What is smaller in scale than a neighborhood?
   - Responses could include places such as a block, street, house, or room.



36

36 *Geographic Inquiry into Global Issues*

Lesson

What can be done about hunger?

Objectives

In this lesson, you will

- Distinguish between hunger and food security on different scales.
- Recognize that hunger on one scale causes hunger on other scales.
- Identify the strengths and weaknesses of the Bellagio and Medford Declarations.

Glossary Words

discrimination
food deprivation
food poverty
gender
scale

Why is the concept of scale important?

Geographers study problems on different scales. A problem that may be clearly visible on the local scale may seem to disappear if viewed from the global scale. This situation works the other way as well. Not all global problems can be seen on smaller scales.

Examining different places on different scales can help you see how places function. For example, a city is one kind of *place* but is made up of many objects like buildings, roads, and people. A neighborhood in a city is also a place but is made up of fewer objects than a city. A neighborhood is also spread over less area than the whole city.

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Hunger 37

The neighborhood exists on a smaller level of scale than a city. So, a place on a large scale has more objects and covers a larger area than a small-scale place.

1. What kind of place is larger in scale than a city?
2. What is smaller in scale than a neighborhood?

How can hunger be viewed on different scales?

Do you now know enough about hunger to understand why it exists? Geographers begin to solve problems by describing them carefully. The geographer, Robert Kates (1992b), studied hunger on three separate scales. He showed that scales of hunger are interrelated.

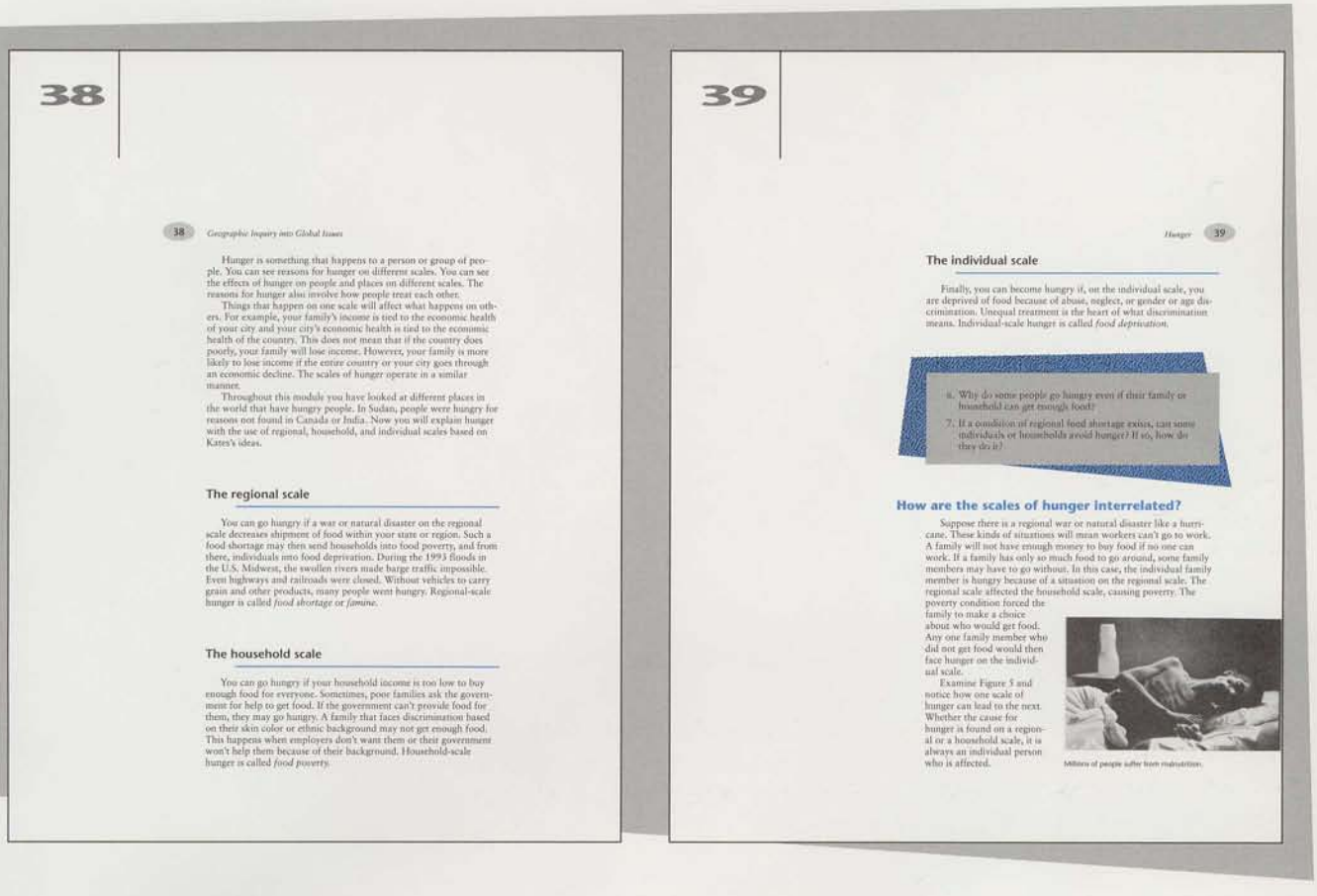
How can problems on different scales be related to each other, or affect each other in some way? Think about the city and neighborhood again. A neighborhood is made up of a few city blocks and all the houses, businesses, and schools found in those blocks. Now, suppose the city wants to build a new airport close to a neighborhood. The people living there probably won't like the noise and traffic caused by the airport. But, the neighborhood residents may not be able to stop construction because they are so few in number. The neighborhood's small scale may make it seem isolated, but it is still tied in many ways to the larger city. In such ways, scales are said to be interrelated. Decisions made on large scales will affect smaller-scale places.

3. What decisions do you think your country has made that have affected your neighborhood?
4. What decisions do you think your city has made that have affected your neighborhood? Other neighborhoods?
5. What neighborhood decisions or problems have affected your city?

How can hunger be viewed on different scales? (pages 37–39)

B. The first part of this section provides students with more information about the idea that scales are interrelated. Have student groups read the text and answer Questions 3–5 on page 37.

Important: That two vastly different scales can affect each other is a central concept in this lesson. The hunger-scale activity sheets to follow help students understand how geographic scales are interrelated. Finding solutions to complex social issues, like hunger, can be problematic. Recent work by the geographer Robert Kates, which formed the theoretical basis for this module, shows how differences in scale are useful for analyzing social issues. Understanding spatial scales permits identification of appropriate solutions that may otherwise have been missed.



38

38 *Geographic Inquiry into Global Issues*

Hunger is something that happens to a person or group of people. You can see reasons for hunger on different scales. You can see the effects of hunger on people and places on different scales. The reasons for hunger also involve how people treat each other.

Things that happen on one scale will affect what happens on others. For example, your family's income is tied to the economic health of your city and your city's economic health is tied to the economic health of the country. This does not mean that if the country does poorly, your family will lose income. However, your family is more likely to lose income if the entire country or your city goes through an economic decline. The scales of hunger operate in a similar manner.

Throughout this module you have looked at different places in the world that have hungry people. In Sudan, people were hungry for reasons not found in Canada or India. Now you will explain hunger with the use of regional, household, and individual scales based on Kates's ideas.

The regional scale

You can go hungry if a war or natural disaster on the regional scale decreases shipment of food within your state or region. Such a food shortage may then send households into food poverty, and from there, individuals into food deprivation. During the 1993 floods in the U.S. Midwest, the swollen rivers made barge traffic impossible. Even highways and railroads were closed. Without vehicles to carry grain and other products, many people went hungry. Regional-scale hunger is called *food shortage* or *famine*.

The household scale

You can go hungry if your household income is too low to buy enough food for everyone. Sometimes, poor families ask the government for help to get food. If the government can't provide food for them, they may go hungry. A family that faces discrimination based on their skin color or ethnic background may not get enough food. This happens when employers don't want them or their government won't help them because of their background. Household-scale hunger is called *food poverty*.

39

Hunger 39

The individual scale

Finally, you can become hungry if, on the individual scale, you are deprived of food because of abuse, neglect, or gender or age discrimination. Unequal treatment is the heart of what discrimination means. Individual-scale hunger is called *food deprivation*.

6. Why do some people go hungry even if their family or household can get enough food?
7. If a condition of regional food shortage exists, can some individuals or households avoid hunger? If so, how do they do it?

How are the scales of hunger interrelated?

Suppose there is a regional war or natural disaster like a hurricane. These kinds of situations will mean workers can't go to work. A family will not have enough money to buy food if no one can work. If a family has only so much food to go around, some family members may have to go without. In this case, the individual family member is hungry because of a situation on the regional scale. The regional scale affected the household scale, causing poverty. The poverty condition forced the family to make a choice about who would get food. Any one family member who did not get food would then face hunger on the individual scale.

Examine Figure 5 and notice how one scale of hunger can lead to the next. Whether the cause for hunger is found on a regional or a household scale, it is always an individual person who is affected.

Millions of people suffer from malnutrition.

Questions and Answers for page 37

3. What decisions do you think your country has made that have affected your neighborhood?
   - This question reaches from the very large scale down to the local. Responses might include such issues as taxation, federal money for schools and roads, or military conscription.

4. What decisions do you think your city has made that have affected your neighborhood? Other neighborhoods?
   - An example may be a highway or busy street that runs through the neighborhood. It probably carries traffic into and out of the larger city or metropolitan area, with a very clear effect on the neighborhood in terms of noise and exhaust.

5. What neighborhood decisions or problems have affected your city?
   - The effects of scale go in both directions. Neighborhood-scale problems that might affect the entire city might include a downed power line, a traffic accident, crime rate, or even the health of area businesses.

C. Have student groups read the descriptions of the scales of hunger on pages 38 and 39. They can then answer Questions 6 and 7. It is hoped students see that there are three situations in which someone may go hungry. Kates has given hunger based on each scale a separate name (regional = *food shortage* or *famine;* household = *food poverty;* and individual = *food deprivation*).

Questions and Answers for page 39

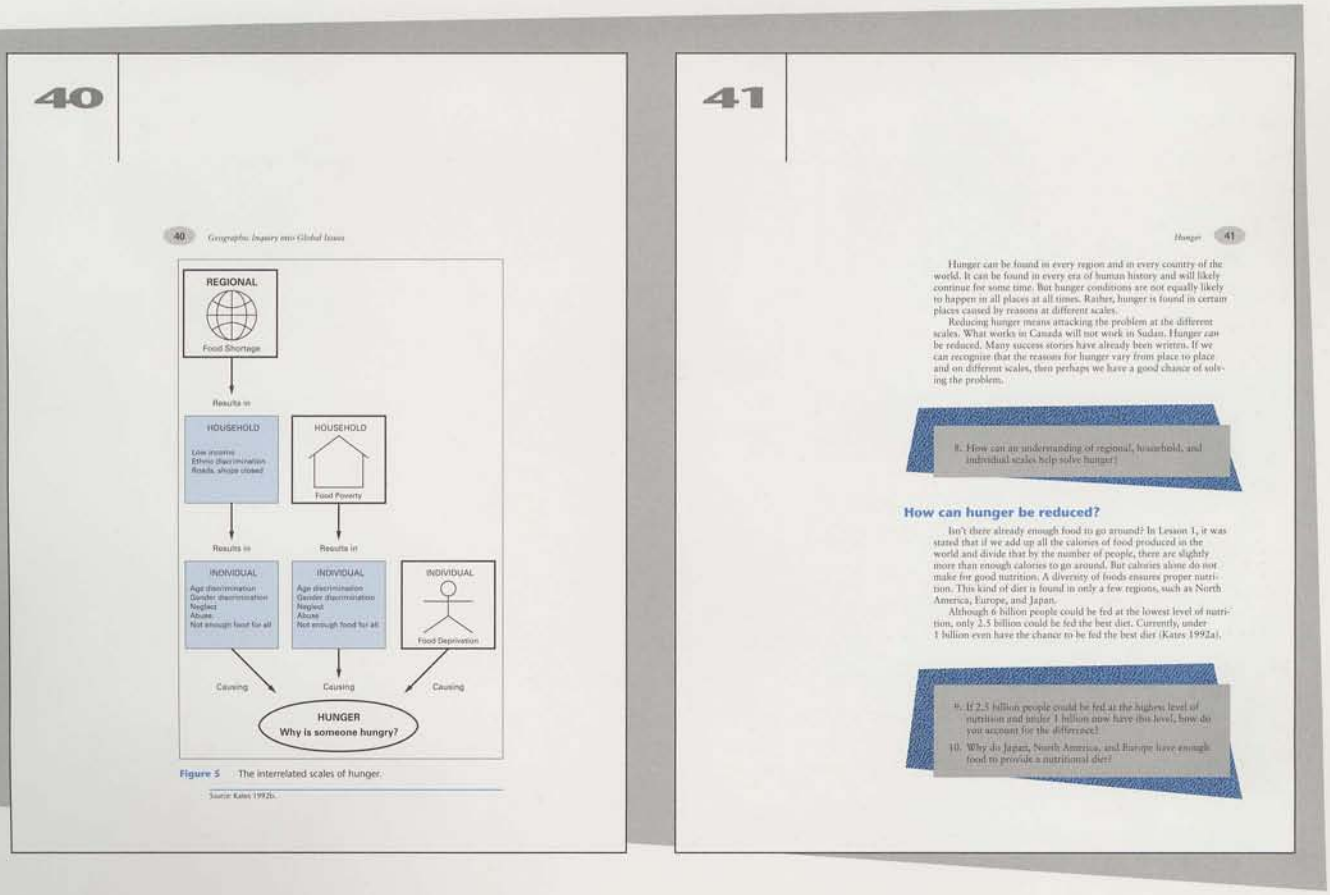
6. Why do some people go hungry even if their family or household can get enough food?
   - If household-scale hunger is not present, someone can still go hungry if there is discrimination on the individual scale. In other words, even if a family is not poor, an elder family member may still go hungry if the family discriminates against the elder for some reason. The case study of the Indian girls (gender discrimination) provided another instance of this situation.

7. If a condition of regional food shortage exists, can some individuals or households avoid hunger? If so, how do they do it?
   - In cases where there is a widespread lack of food, individuals and families may still get food from relief agencies or home stockpiles, or they may purchase food from other regions or neighboring countries. Also, some wealthier individuals may be able to obtain food even when it is scarce for most.

How are the scales of hunger interrelated? (pages 39–41)

D. This section focuses on Figure 5 (page 40), which shows how the scales of hunger are interrelated and function as a cascade—one situation leading to another. Open discussion on Question 8 on page 41.

To illustrate the concept of a cascade, ask students to consider the following scenarios: What has to happen to prevent them from going to school? One sequence of events that demonstrates how a regional event can affect individuals is when a major snowstorm hits a city. Roads become impassable, preventing school buses from covering their routes. If bus drivers can't drive their buses, schools have to be canceled. Other reasons for missing school do not affect the whole region. One example would be an illness that strikes individuals (but not an epidemic). Here there is no cascade function, simply a cause of missed school on the individual scale.



Question and Answer for page 41

8. How can an understanding of regional, household, and individual scales help solve hunger?
   - The first step to solving a problem is to identify its component parts. The scales offer a starting point from which specific plans can be made to address the problem. Identifying the scale of a problem makes it more likely that proposals to solve it will be at the appropriate scale. For instance, if the problem is only at the individual scale (as in the case of the sick student in the above scenario), there is no need to think of solutions that focus on an entire region. But if the health problem was an epidemic, curing one individual would not remove the problem—regional-scale health measures would be needed.

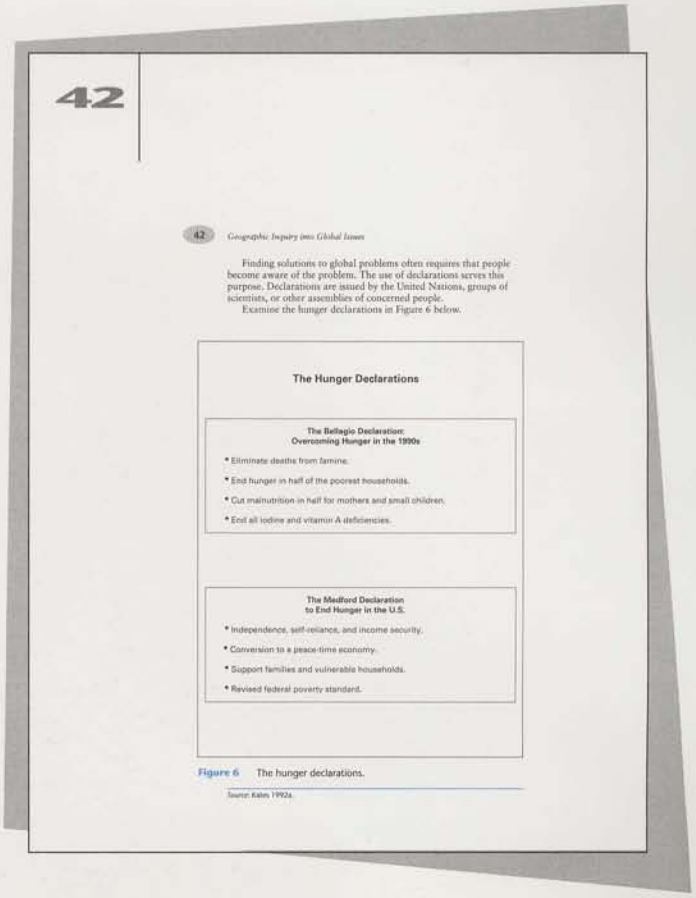
E. Distribute copies of **Activity 6** (a copy of Figure 5) to each student. Have students review their Activities 3–5 and match the name of a case-study child (Angelo Chol, Jessica Ross, or Tapati Das) to each scale of hunger—regional, household, and individual. See *Key for Activity 6*.

Students may rightly point out that each child is an example of individual hunger, but they need to recall the larger causes (the cascade concept) to identify why each child is hungry in order to choose the correct answer. Call on several students to explain why they matched each case study to each scale. For students who made an incorrect choice, let them erase their first selection and write in the correct name.

How can hunger be reduced? (pages 41–43)

F. Many solutions have been advanced to reduce hunger in the world. It is important for students to understand that the causes of hunger are different for different regions and countries of the world, as this module has emphasized.

Divide the class into small groups. Have groups briefly discuss Questions 9 and 10, which summarize the problem of food distribution first introduced in Lesson 1.


42

42 *Geographic Inquiry into Global Issues*

Finding solutions to global problems often requires that people become aware of the problem. The use of declarations serves this purpose. Declarations are issued by the United Nations, groups of scientists, or other assemblies of concerned people.
Examine the hunger declarations in Figure 6 below.

The Hunger Declarations

The Bellagio Declaration: Overcoming Hunger in the 1990s

- Eliminate deaths from famine.
- End hunger in half of the poorest households.
- Cut malnutrition in half for mothers and small children.
- End all iodine and vitamin A deficiencies.

The Medford Declaration to End Hunger in the U.S.

- Independence, self-reliance, and income security.
- Conversion to a peace-time economy.
- Support families and vulnerable households.
- Revised federal poverty standard.

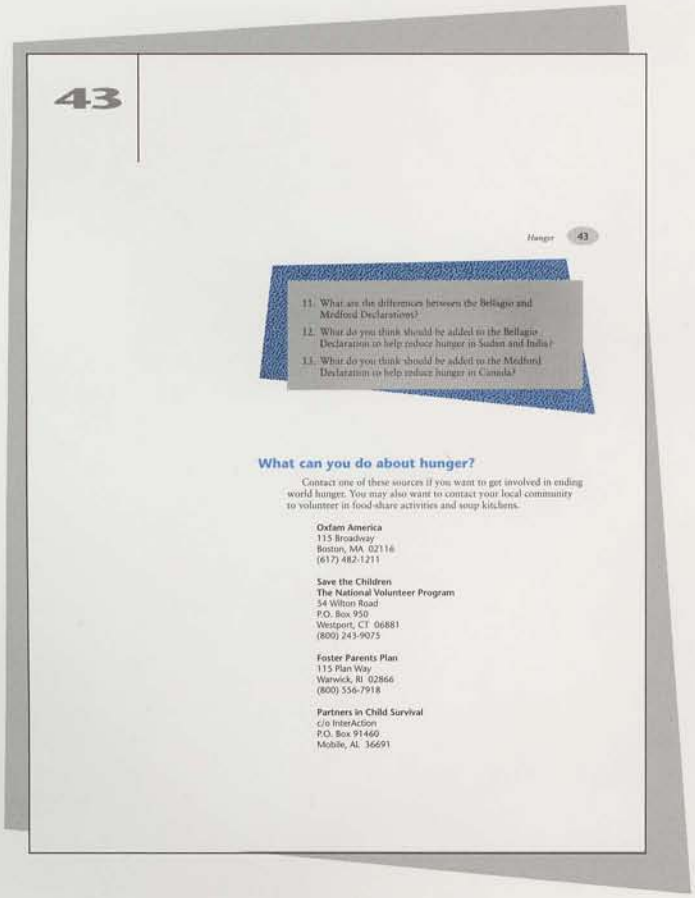
Figure 6 The hunger declarations.

Source: Kates 1992a.

Questions and Answers for page 41

9. If 2.5 billion people could be fed at the highest level of nutrition and under 1 billion now have this level, how do you account for the difference?
   - The 1 billion now fed at the highest nutrition levels must be wasting some of the food available and, for some reason, are not able to give their extra food to the other 1.5 billion. Perhaps the other 1.5 billion cannot buy the extra food or have it donated to them. Students may recognize this as a problem of food distribution.

10. Why do Japan, North America, and Europe have enough food to provide a nutritional diet?
    - These regions have enough food because they either have enough good farmland, can afford to buy food from places that do have good farmland, do not have severe social and political problems, or some combination of these reasons.


43

Hunger 43

11. What are the differences between the Bellagio and Medford Declarations?
12. What do you think should be added to the Bellagio Declaration to help reduce hunger in Sudan and India?
13. What do you think should be added to the Medford Declaration to help reduce hunger in Canada?

What can you do about hunger?

Contact one of these sources if you want to get involved in ending world hunger. You may also want to contact your local community to volunteer in food-share activities and soup kitchens.

Oxfam America
115 Broadway
Boston, MA 02116
(617) 482-1211

Save the Children
The National Volunteer Program
54 Wilton Road
P.O. Box 950
Westport, CT 06881
(800) 243-9075

Foster Parents Plan
115 Plan Way
Warwick, RI 02866
(800) 556-7918

Partners in Child Survival
c/o InterAction
P.O. Box 91460
Mobile, AL 36691

G. Traditional ways of approaching hunger are found in general statements from various organizations; the Bellagio and Medford Declarations (Figure 6 on page 42) are typical. Have groups examine these declarations and critique them. Ask whether these proposals can solve world hunger. [Such declarations are useful for identifying possible ways to solve the problem, but they do not really include methods to implement their ideas. While these help raise awareness, they are too general to be really useful.]

Next ask groups to consider how identifying the scales of hunger (Figure 5) is an improvement over the declarations shown in Figure 6. [By identifying the causes of hunger at different geographic scales, this system suggests that solutions must be appropriate to the scale of the problem in a particular place.]

Have the groups discuss Questions 11–13 and present their answers to the rest of class.

Questions and Answers for page 43

11. What are the differences between the Bellagio and Medford Declarations?

    - The Bellagio Declaration is global in scale and is meant to cover those regions with the worst hunger problems. The Medford Declaration is aimed solely at the United States. Bellagio also has greater emphasis on nutritional goals and very general statements about the need to end death from hunger and decrease poverty. Medford emphasizes more specific goals aimed at increasing income and educational opportunities and giving the government a role to play in supporting those already in poverty and hungry.

12. What do you think should be added to the Bellagio Declaration to help reduce hunger in Sudan and India?

    - A goal that identifies social and political problems as contributing to hunger is needed. Also, the declaration overlooks the need for improved agricultural practices in the face of environmental threats like drought. Other items students may note include increasing education for girls and economic opportunity for women and ending all forms of discrimination.

13. What do you think should be added to the Medford Declaration to help reduce hunger in Canada?

    - Ideas here may include the need for more and better-paying jobs and to increase government aid to families. Students may find few other goals to add, as Medford is a good approximation of the kind of scale-specific goals Kates's model suggests.

H. Distribute copies of **Activity 7** to each group. Groups can review Activities 3–5 for their reasons for each child's hunger. From those reasons, groups can address solutions, now considering each hunger problem in its appropriate scale. [Solutions that may be advanced by students include the following:

    - Angelo Chol faces regional-scale hunger because of disruptions caused by civil war. First, stop the war; then, rebuild infrastructure with funds from international organizations and resettle the migrants to original lands.
    - Jessica Ross has suffered periods of hunger because her mother cannot earn enough money. She is in household poverty, therefore, provide educational or job opportunities to raise her income. Another possibility is to provide federal welfare money or federal day-care help, but in the long run, governments cannot take the place of a good job.
    - Like many Indian girls, Tapati Das is not treated the same as a boy by her society and even by her parents. Gender discrimination would need to end throughout Indian society to resolve this case of individual-scale hunger. While that may be a solution, getting there will take legislation, pressure from civil rights groups, and change to the very culture of the country.]

What can you do about hunger? (page 43)

I. The major organizations listed in the Student DataBook have ways in which individuals and schools can become involved to resolve the issue of world hunger. If students are interested, have them write to these organizations to learn how they can help. You may also wish to contact UNICEF or the American Red Cross for other ideas and organizations.

Involvement in faraway countries may seem a daunting task for students, and if this is the case, try organizations closer to home, perhaps in your hometown. Soup kitchens, the local Red Cross, the Salvation Army, and church groups are good places to start. Local involvement can make the reality of hunger more immediate and can lead to action to satisfy student ambitions to do something about hunger.

Extension Activities and Resources

1. **Related GIGI Modules**
   - For further study of the economic development issues raised in this module, see the GIGI modules *Development, Infant and Child Mortality,* and *Urban Growth. Development* explores how economic development affects peoples and places, using the case of the Amazon region of Brazil as its main focus. *Infant and Child Mortality* lets students look at the causes and develop solutions to that problem. The major case study is Central Africa. *Urban Growth* examines the problems associated with rapid urbanization and urban growth in developing countries; Mexico is the major case study.
   - For a further look at environmental issues related to the issue of hunger, see the GIGI modules *Sustainable Agriculture* and *Population and Resources.* The former inquires into the problems associated with feeding rapidly growing populations in the developing world, with a focus on Malaysia. *Population and Resources* examines how population growth places a strain on the resources of developing countries, with Bangladesh as the major case study.
   - For further inquiry into some related political issues, see the GIGI modules *Religious Conflict* and *Population Growth.* Using the case study of Kashmir, *Religious Conflict* explores how differences in religion can lead to political strife within and between nations. *Population Growth* examines strategies taken by countries (the major focus is on China) to control rapid population growth.

2. **Britannica Global Geography System (BGGS)**

   BGGS provides myriad extension activities to enhance each GIGI module. For a complete description of the BGGS CD-ROM and videodiscs and how they work with the GIGI print modules, please read the BGGS Overview in the tabbed section at the beginning of this Teacher's Guide.

3. **Related Videos**
   - EBEC videos "Africa"; "Oasis"; "Sahara: A Desert Region"; "Rivers in Danger: The Zambezi and the Nile"; and "India:

Diverse and Complex Land" explore the issues and regions studied in this module.

For more information, or to place an order, call toll-free, 1-800-544-9862.

Other related videos include: "Remember Me" (Pyramid Films). Also, the film *A Passage to India* is available from most video stores.

4. **Additional Activities**
   - Extend this module by examining human rights and asking students if humans have the right to a nutritionally sound diet. Have students explore active ways to help eliminate hunger (e.g., joining Oxfam to raise awareness of hunger among the people of the developed world).
   - Suggest that students hold a food drive for the hungry people of their own community. Many communities sponsor "food share" programs around the Thanksgiving and Christmas holidays for needy families.

Activity 1 •••

GIGI
Hunger
Lesson 1

Names _____

Brainstorm List

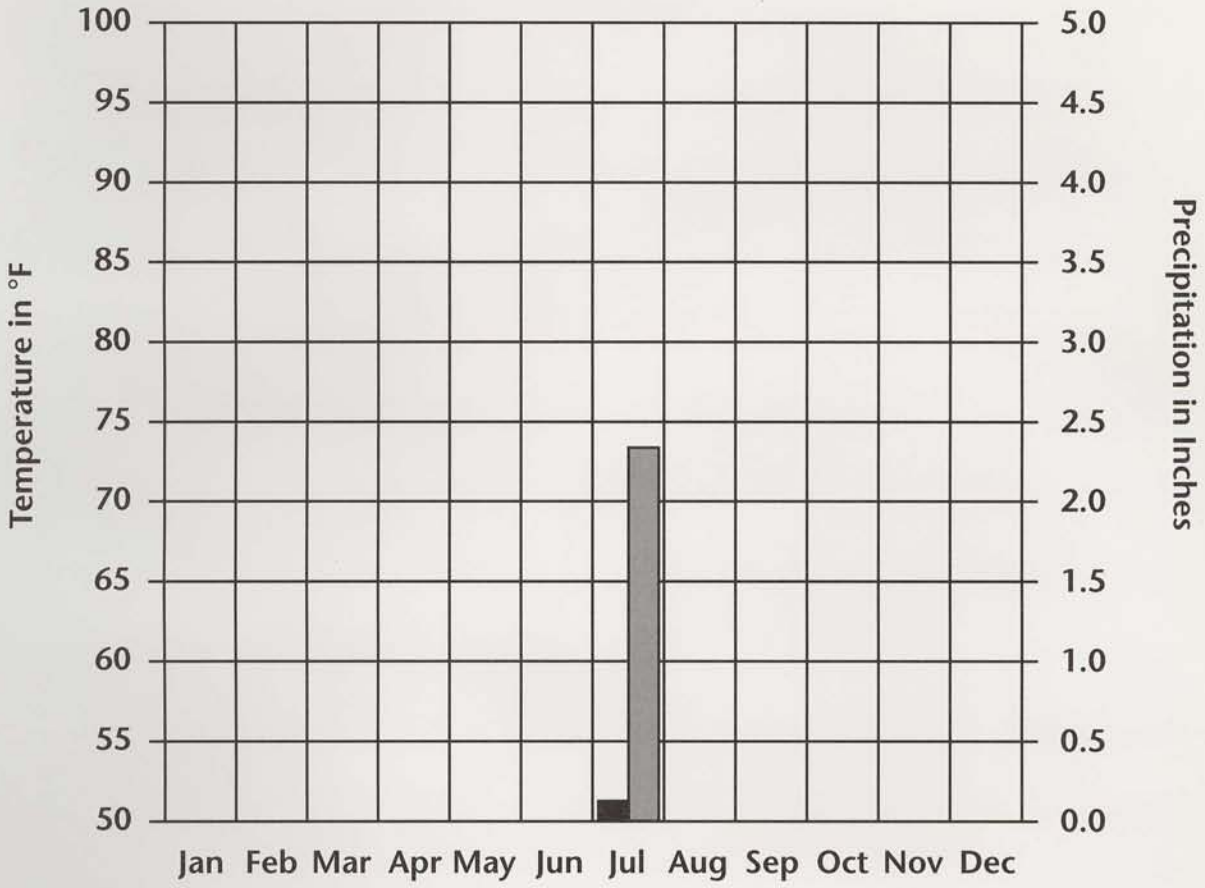
I. Brainstorm a list of as many reasons as you can think of that may cause someone to go hungry.

II. Are any of the reasons you listed connected to others on your list? How are they connected?

Names _____

GIGI
Hunger
Lesson 2

Climograph for Wadi Halfa and Khartoum, Sudan



Legend

- Temperature values for Wadi Halfa
- Temperature values for Khartoum
- Precipitation values for Wadi Halfa
- Precipitation values for Khartoum

1. Use a red pencil and plot the temperatures for Wadi Halfa and Khartoum as two line graphs. Use a solid line for the temperatures in Wadi Halfa and a dashed line for the temperatures in Khartoum.
2. Use a blue or black pencil to plot the precipitation values for Wadi Halfa and Khartoum. Create bar graphs to show these values. July was done for you as an example of how to do each month. Notice that Wadi Halfa is dark colored, while the bar for Khartoum is shaded.

Activity 3 •••

GIGI
Hunger
Lesson 3

Names _____

Why Is Angelo Chol Hungry?

Directions: Review the account of Angelo Chol on pages 4–5 in your Student DataBook and list as many reasons as you can find to explain why he is hungry. Some explanations may also be found in Lessons 2 and 3.

Activity 4 •••

Names _____

GIGI

Hunger

Lesson 3

Why Is Jessica Ross Hungry?

Directions: Review the account of Jessica Ross on page 29 in your Student DataBook and list as many reasons as you can find to explain why she is hungry.

If Jessica lived in your community, what could you do to help?

Activity 5 •••

Names _____

GIGI

Hunger

Lesson 6

Why Is Tapati Das Hungry?

Directions: Review the account of Tapati Das on page 33 in your Student DataBook and list as many reasons as you can find to explain why she is hungry.

Name _____

GIGI
Hunger
Lesson 7

The Interrelated Scales of Hunger

Directions: Review your readings about Tapati Das, Jessica Ross, and Angelo Chol. Decide which child is an example of Regional, Household, or Individual hunger. Then put the name of that child in the place provided on this sheet.

Child's name _____

Regional

Food Shortage

Results in

Household

- Low income
- Ethnic discrimination
- Roads, shops closed

Results in

Individual

- Age discrimination
- Gender discrimination
- Neglect
- Abuse
- Not enough food for all

Causing

Child's name _____

Household

Food Poverty

Results in

Individual

- Age discrimination
- Gender discrimination
- Neglect
- Abuse
- Not enough food for all

Causing

Child's name _____

Individual

Food Deprivation

Causing

HUNGER

Why is someone hungry?

The Interrelated Scales of Hunger

Child's name [Angelo Chol]

Regional

Food Shortage

Results in

Household

- Low income
- Ethnic discrimination
- Roads, shops closed

Results in

Individual

- Age discrimination
- Gender discrimination
- Neglect
- Abuse
- Not enough food for all

Causing

Child's name [Jessica Ross]

Household

Food Poverty

Results in

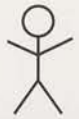
Individual

- Age discrimination
- Gender discrimination
- Neglect
- Abuse
- Not enough food for all

Causing

Child's name [Tapati Das]

Individual



Food Deprivation

Causing

HUNGER

Why is someone hungry?

Names _____

GIGI

Hunger

Lesson 7

Solutions for Hunger by Scale

Regional

Food Shortage

REGIONAL FOOD SHORTAGE

What can be done?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Put the name of the child here from your work on Activity 6.

How can _____ be helped?

Names _____

GIGI

Hunger

Lesson 7

HOUSEHOLD FOOD POVERTY

What can be done?

_____

_____

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_____

Put the name of the child here from your work on Activity 6.

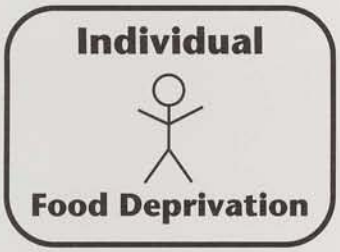
How can _____ be helped?

Names _____

GIGI

Hunger

Lesson 7



INDIVIDUAL FOOD DEPRIVATION

What can be done?

Put the name of the child here from your work on Activity 6.

How can _____ be helped?

"Powerless" Quotation

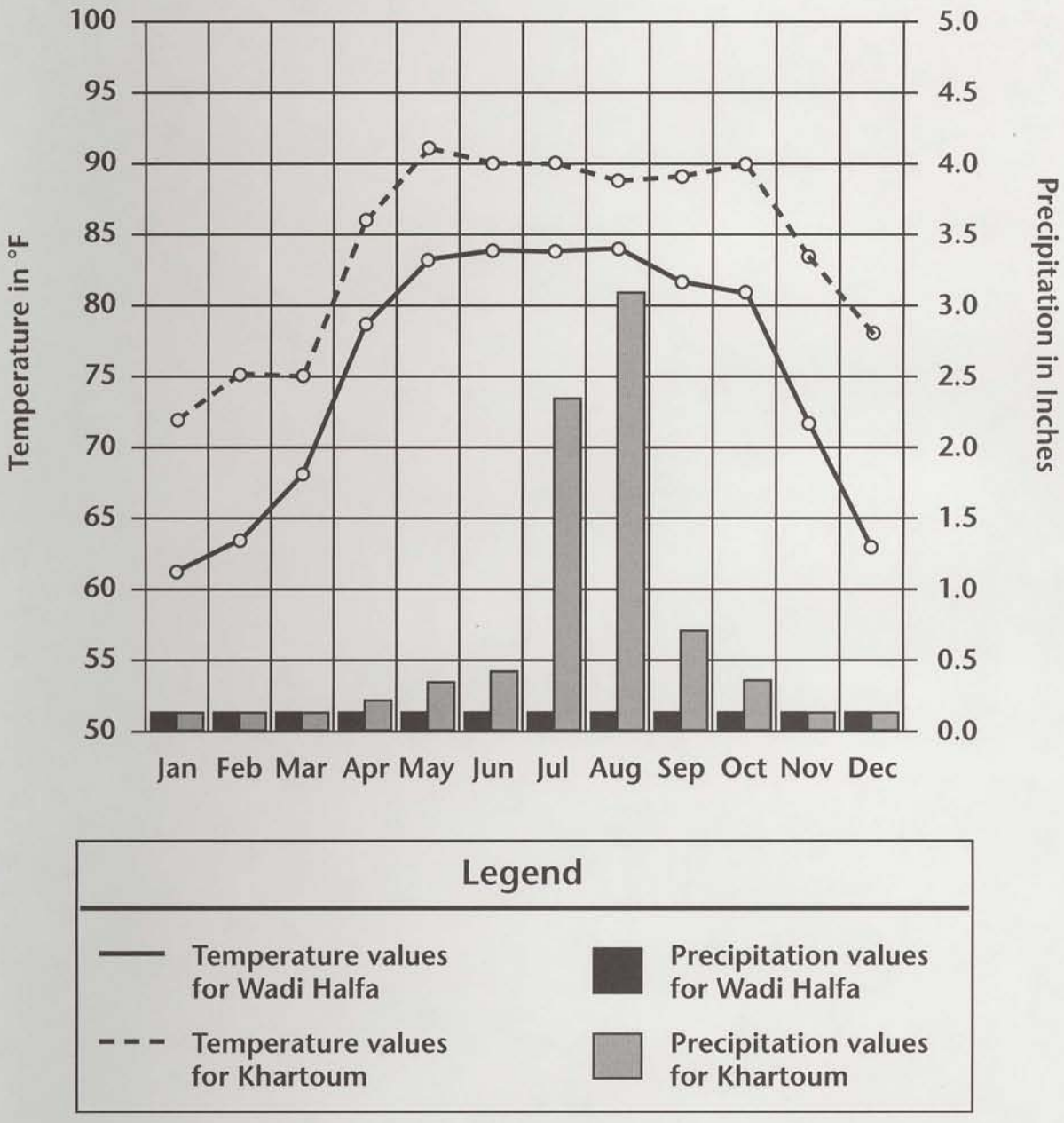
"If we think of hunger as numbers—numbers of people with too few calories—the solution also appears to us in numbers—numbers of dollars in economic assistance. But once we begin to understand hunger as real people coping with the most painful of human emotions [anguish, grief, humiliation, and fear], we can perceive its roots.

"We need only to ask, when have we experienced any of these emotions ourselves? Hasn't it been when we've felt out of control of our lives—powerless to protect ourselves and those who we love?

"Hunger has thus become for us the ultimate symbol of powerlessness."

Source: Lappé, Frances Moore, and Collins, Joseph. 1986. *World Hunger: Twelve Myths.* New York: Grove Press.

Climograph for Wadi Halfa and Khartoum, Sudan



Roles of Witnesses in Hearing

Islamic leaders

The Islamic leaders want to keep strict Islamic law in force for all Sudanese, including the people in the south. However, they may grant limited exceptions in future negotiations for non-Muslims. Because the majority of the population is Muslim, they say the majority should rule.

Christian and animist leaders

The Christian and animist leaders want a secular government based on civil law, not religion. They will not change their religious beliefs to conform to government laws. They desire to stop the spread of Islam in southern Sudan.

President of Sudan

The president is a Muslim, like the majority of Sudanese. The president seeks peace, but wants to continue rule with Islamic law. The president supports Muslim leadership and seeks international aid to improve economic development in Sudan.

Military generals

The generals want to maintain order and put down the SPLA rebels. They will follow the orders of the president.

SPLA rebel leaders

Although the SPLA are not fighting to create their own country, they want to be free of government laws that impose Islam on all Sudanese. They also want economic development for southern Sudan.

BRITANNICA GLOBAL GEOGRAPHY SYSTEM

GIGI

Geographic Inquiry into Global Issues

Hunger

Program Developers
A. David Hill, James M. Dunn, and Phil Klein

Regional Case Study
North Africa/Southwest Asia

Britannica
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Contents

GIGI National Field Trial Locations

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Juneau, AK
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Lakewood, CO
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La Porte, IN
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Memo to the Student from the GIGI Staff

GIGI stands for *Geographic Inquiry into Global Issues,* which is the name of a series of modules. Each module inquires into a different world issue. We wrote this memo to explain that GIGI is different from most textbooks you have used.

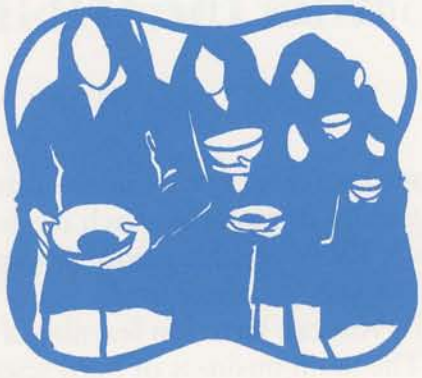
With GIGI, you can have fun learning if you think like a scientist or detective. The main business of both scientists and detectives is puzzle-solving. They use information ("data" to the scientist and "evidence" to the detective) to test their solutions to puzzles. This is what you do with GIGI. GIGI poses many puzzles about important global issues: Each module centers around a major question, each lesson title is a question, and there are many other questions within each lesson. GIGI gives you real data about the world to use in solving these puzzles.

To enjoy and learn from GIGI, you have to take chances by posing questions and answers. Just as scientists and detectives cannot always be sure they have the right answers, you will sometimes be uncertain with GIGI. But that's OK! What's important is that you try hard to come up with answers, even when you're not sure. Many of GIGI's questions don't have clear-cut, correct answers. Instead, they ask for your interpretations or opinions. (Scientists and detectives are expected to do this, too.) You also need to ask your own questions. If you ask a good question in class, that can sometimes be more helpful to you and your classmates than giving an answer.

The data you will examine come in many forms: maps, graphs, tables, photos, cartoons, and written text (including quotations). Many of these come from other sources. Unlike most textbooks, but typical of articles in scientific journals, GIGI gives its sources of data with in-text references and full reference lists. Where an idea or piece of information appears in GIGI, its author and year of publication are given in parentheses, for example: (Gregory 1990). If the material used is quoted directly, page numbers are also included, for example: (Gregory 1990, pages 3–5). At the end of the module you'll find a list of references, alphabetized by authors' last names, with complete publication information for the sources used.

To help you understand the problems, GIGI uses "case studies." These are examples of the global issue that are found in real places. "Major case studies" detail the issue in a selected world region. You will also find one or two shorter case studies that show variations of the issue in other regions.

We hope your geographic inquiries are fun and worthwhile!



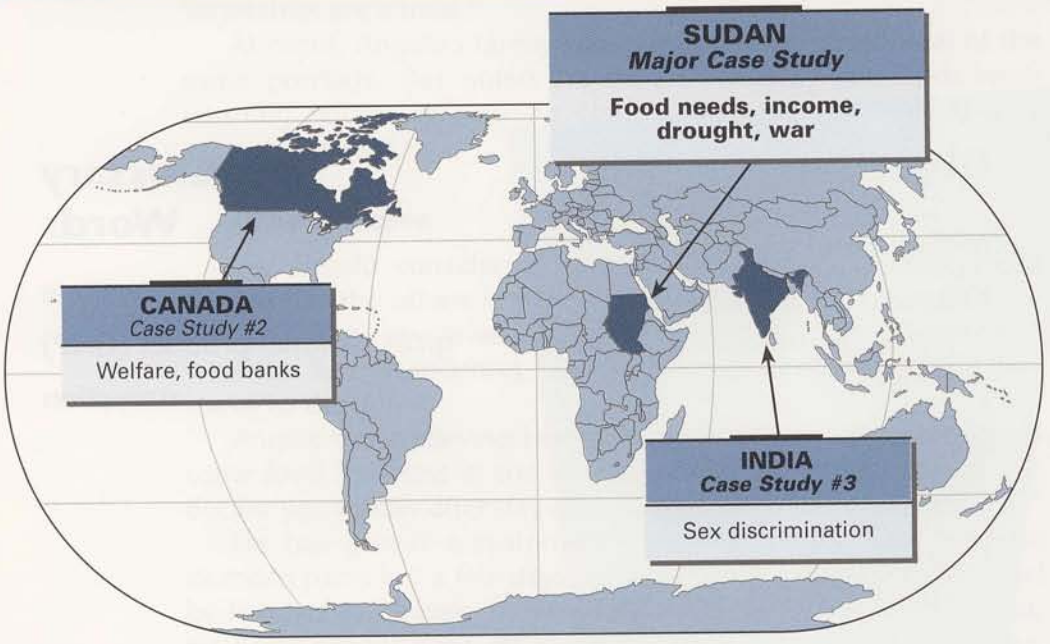
Hunger

Why are people hungry?

- How much food do you need to be healthy?
- Why can't all countries grow enough food to feed their people?
- Why are people hungry when there is enough food?
- What can you do about hunger in your community?

In this module, you will see why hunger exists in all parts of the world. There are hungry people in developing countries like Sudan in Africa. There are hungry people in city centers in Canada. It is important to study hunger in order to help solve this human tragedy.

Hunger causes a great deal of suffering and death in the world. Geographers ask where hunger exists, and identify the different reasons for hunger in each setting. This module looks at the causes of widespread hunger in a large region through a major case study of Sudan in Northern Africa. You will also study hunger in shorter comparison case studies of Canada and India.



Questions You Will Consider in This Module

- What is hunger and where does it exist?
- What are the environmental and social causes of food shortages?
- Why are there hungry people in wealthy countries?
- Do people have a right to food?
- What can be done to eliminate hunger?

Lesson 1

Why is Angelo Chol hungry?

Objectives

In this lesson, you will

- Recognize the social and economic indicators of hunger.
- See how your food intake compares to your body's needs.
- Map and interpret the global distribution of food intake.

Glossary Words

calorie

gross national product (GNP)

starvation

What is it like to always be hungry?

You get hungry when you miss a meal. Maybe you get involved with some interest and just forget to eat or decide to put off eating for a while. But millions of people in the world are always hungry because they don't have enough food. Sudan, in northern Africa (Figure 1 on page 6), is a country that has many people who suffer permanently from hunger. The following story was written about a teenage boy in Sudan.

One teen's bout with hunger

Forced to flee

Four years ago, Angelo and his family were forced to flee from their home in southern Sudan. Armed tribesmen, fighting the Sudanese government in a civil war, had invaded Angelo's village.

They stole the villagers' cattle and burned most of the homes. . . .

Because Angelo's family is so poor, they rarely have a morning meal. "Sometimes we have tea," says Angelo, "but most of the tea we have, my younger sister tries to sell to anyone who passes by our shelter."

Angelo gets his noon meal—his only certain meal of the day—at the school he attends. The porridge he eats is made of *dura*—a grain that has been boiled into a paste. "Sometimes, there is a little sugar to sweeten it, and a bit of flat bread," Angelo says. "If we are lucky, we may also have some corn or tomatoes or onions. Vegetables are a treat."

At night, Angelo's family sometimes has a smaller meal of the same porridge. But unless his mother is lucky and finds work cleaning houses or washing clothes, they do not have money enough for food.

Others starve

Yet Angelo considers his family fortunate. Every day, more people join the others in the settlements. They, too, have fled the civil war. The newcomers tell grim tales of others who were too weak to flee. Wandering, searching desperately for food, they starve to death.

Angelo is not starving here. International relief agencies supply some food for those in the settlements who have nothing to eat. But for years—day after day after day—Angelo has gone hungry.

He has grown accustomed to being hungry. The gnawing stomach pains last a few days. Eventually, they disappear, replaced by headaches. Angelo is always tired. And, with too little to eat, his body cannot fight off diseases. As a result, malaria, diarrhea, and intestinal parasites are common where he lives (Whitford 1989, page 3).

Why is Angelo Chol hungry?

1. Why does Angelo have so little food?
2. Despite the difficulties that Angelo faces, he considers his family to be fortunate. Why?
3. What evidence in Angelo's story suggests that his condition is common in Sudan?
4. What consequences do people suffer when their bodies are not properly nourished?

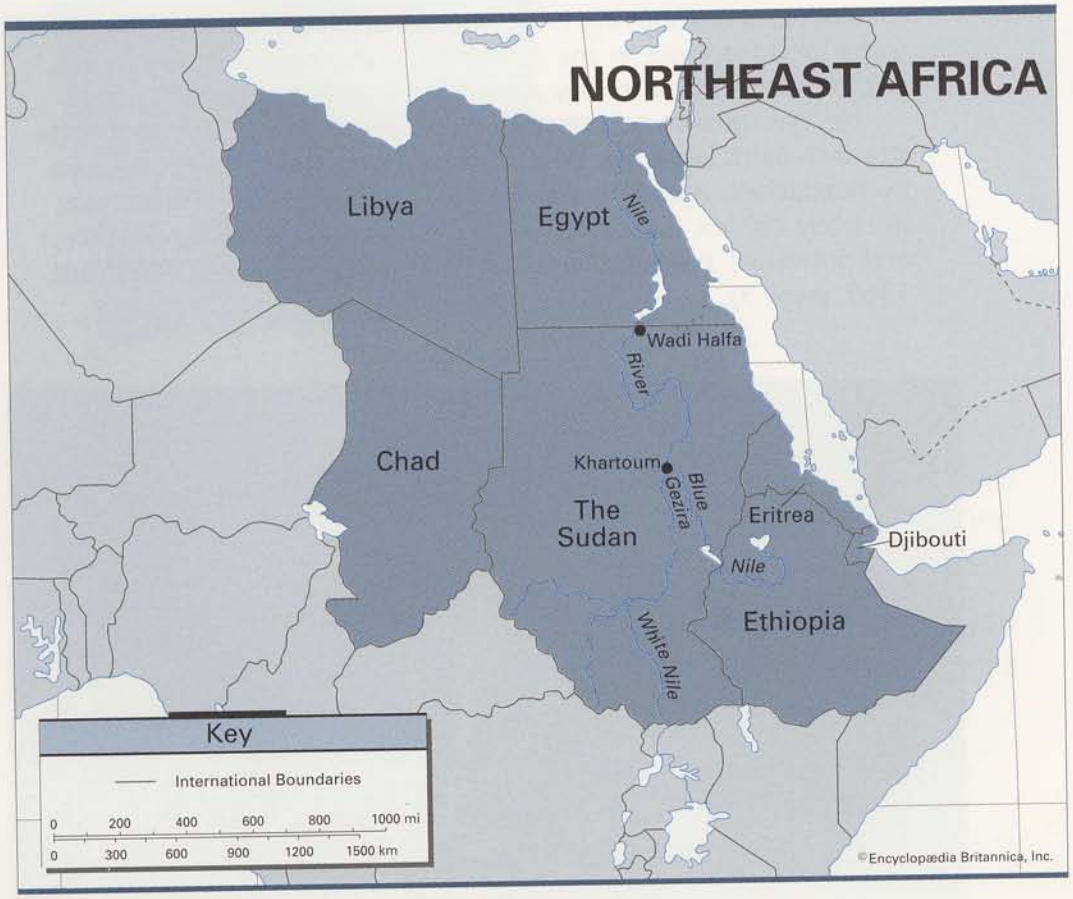


Figure 1 Sudan is located in northeast Africa.

How much food does Angelo need?

Caloric value is a common measure of food intake. The average person needs to consume at least 2,360 calories per day to maintain life (Miller 1992). One calorie represents the energy needed to raise the temperature of one gram of water by one degree Celsius. Like most living things, the human body is mostly made of water, so the calorie represents a reasonable measure. Whenever energy is used, heat is produced. Cars get hot because engines burn fuel and release the heat energy in gasoline. Your average body temperature of 98.6°F comes from burning food for heat energy. Heat is lost to cooler air surrounding your body.

You will experience hunger if you do not get 2,360 calories per day. That is known as malnourishment. But to be healthy—to ensure proper nutrition—you need more than calories. In order to grow up healthy you need proteins, carbohydrates, fats, and trace elements in the right amounts, to avoid malnourishment. This condition can lead to death, as reported in the following news item:

150 Mexican Kids Die of Malnutrition Daily

Mexico City—An average of 150 Mexican children die each day of illnesses related to malnutrition, says Adolfo Chavez, director of the National Nutrition Institute. Some 2 million children here suffer some kind of malady caused by insufficient food (*Denver Post* 1993).

5. What are some reasons that may cause someone to go hungry?
6. How are the reasons you've listed above connected to each other?

Who is hungry in the world?

A food shortage exists in a region or country if hunger exists in thousands or millions of households and families. Table 1 provides numerical indicators of economic and social conditions in selected countries. How can these help determine the likelihood of widespread hunger?

Table 1 Selected indicators used to identify hunger, for selected countries

Country	GNP per person (1993)	Calories per day (1989)	Life expectancy (1993)	Birth rate per 1,000 people (1993)
Bangladesh	220	2,021	53	37
Bolivia	650	1,916	61	37
Canada	21,260	3,482	77	15
Denmark	23,660	3,628	75	13
France	20,600	3,465	77	13
India	330	2,229	59	31
Japan	26,920	2,956	79	10
Mexico	2,870	3,052	70	29
Namibia	1,120	1,946	58	43
Saudi Arabia	7,070	2,874	66	39
Sudan	400	1,974	53	45
United States	22,560	3,671	75	16

Sources: Population Reference Bureau 1993; World Bank 1992.

7. Which countries would you predict to have hungry people? Why?
8. Do you think that some people in the richest countries might be hungry, too? Why or why not?
9. Which indicator in Table 1 seems to be most closely related to average calories per day?

The world produces enough food to give every person approximately 2,700 calories per day. People do not, however, receive the same amount of food (Table 2 below).

Table 2 World food production by region

World region	Calories per person per day
Sub-Saharan Africa	2,122
East Asia and Pacific	2,617
South Asia	2,215
Europe	3,433
North Africa/Southwest Asia	2,721
Latin America and Caribbean	3,327
North America	3,576

Source: World Bank 1992.

10. Which regions on Earth appear to have access to the most calories? Which regions have the least?
11. Why do you think one region has access to more calories than another?

How does drought cause hunger in Sudan?

Objectives

In this lesson, you will

- Locate Sudan in the Sahel region of northern Africa.
- Understand the human causes and effects of drought.
- Relate temperature and precipitation patterns to areas of drought.

Glossary Words

drought

famine

starvation

How is hunger related to droughts?

Food shortages are sometimes blamed on drought—a prolonged period of less-than-average precipitation. Lack of rain can seriously affect people. Drought may lead to hunger, starvation, and famine. Most of the world's people work the land for food (Population Reference Bureau 1993). Thus, drought can be a very serious threat where people live directly off the land. That is the case in the African Sahel, a region where drought is frequent, thus making agriculture risky.

Why does drought occur in Sudan?

Sudan is located within a region known as the Sahel (which means "border") that stretches from the Indian Ocean across northern Africa to the Atlantic (Figure 2 below). The Sahel gained great attention during the 1980s when drought and famine were widespread. Table 2 on page 9 compares Wadi Halfa's climate outside the Sahel to Khartoum's climate (Wadi Halfa and Khartoum can be found on Figure 1 on page 6).

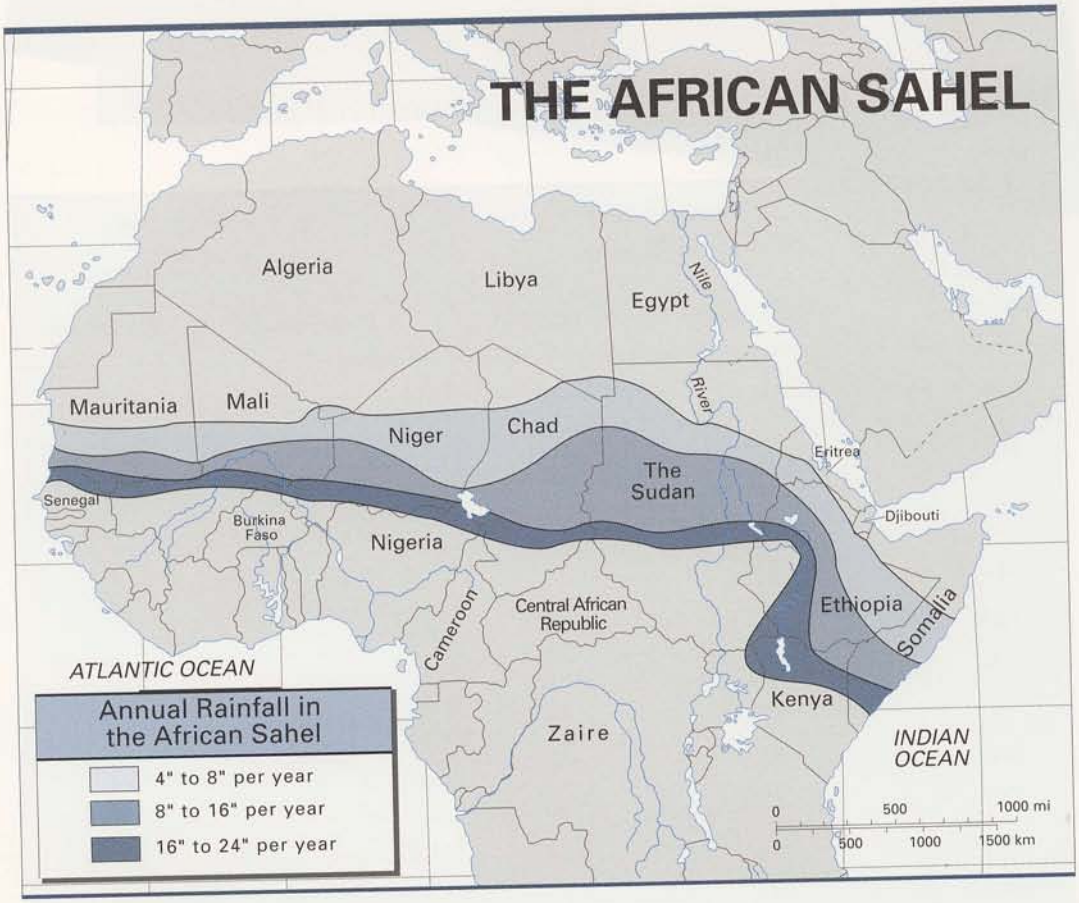


Figure 2 The African Sahel region.

Source: McKnight 1990.

1. Egypt, Sudan's northern neighbor, is a country with which you are probably familiar. How would you describe the climatic conditions in Egypt?
2. Where in Egypt would you choose to grow food? Why?

Table 3 Selected climate conditions for Wadi Halfa and Khartoum, Sudan

	Temperature (°F)		Precipitation (inches)	
Month	Wadi Halfa	Khartoum	Wadi Halfa	Khartoum
Jan	61	72	<.1	<.1
Feb	63	75	<.1	<.1
Mar	68	75	<.1	<.1
April	78	86	<.1	.2
May	83	91	<.1	.3
June	84	90	<.1	.4
July	84	90	<.1	2.4
Aug	84	88	<.1	3.1
Sept	82	89	<.1	.7
Oct	81	90	<.1	.3
Nov	72	83	<.1	<.1
Dec	63	77	<.1	<.1

Note: < = less than.

Source: Strahler and Strahler 1992.

3. Describe how temperature and rainfall values change throughout the year.
4. Why do you think drought is a frequent occurrence in the Sahel?
5. How does Sudan differ from your state or region?
6. Sudan is the largest country in Africa in terms of land area. Is it reasonable to assume that climate conditions are the same everywhere in such a large country? Why or why not?
7. What kind of information other than that found in Table 3 would help you to discover how climatic conditions vary over a vast land?

Terrain in Sudan ranges from desert, such as this, to swamp, plains, and mountain peaks.

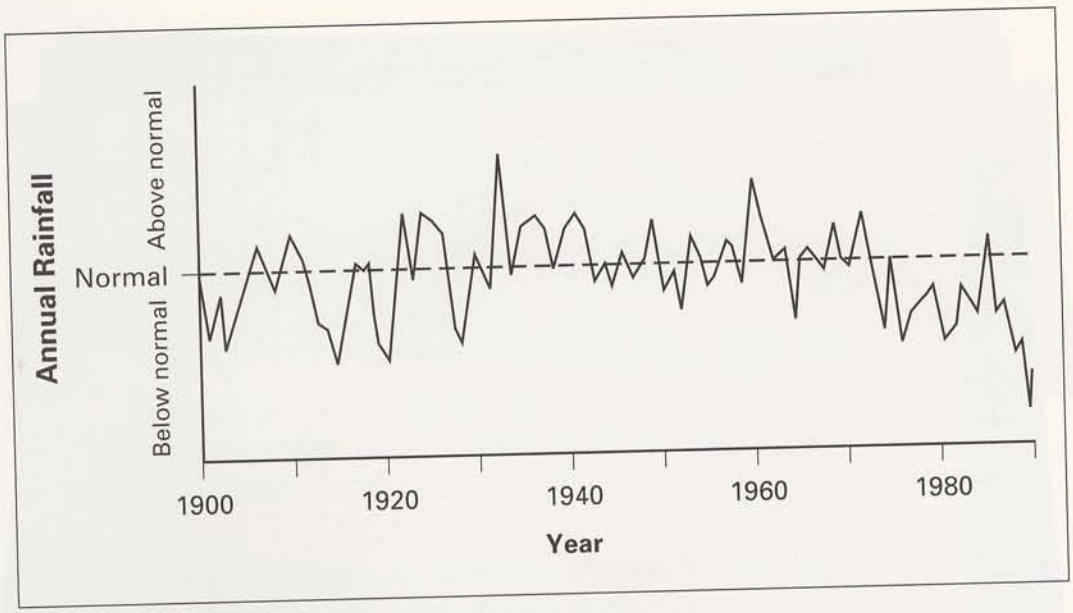


Figure 3 Rainfall in Sudan, 1900–1985.

Source: Hulme and Trilsbach 1991.

8. According to Figure 3, how many years of below-normal rainfall has Sudan experienced in the twentieth century?
9. How do you think wealthy countries deal with dry periods?

What is the human cost of drought?

Nobody knows how many people died in a horrendous drought in western Sudan in 1984. By 1988, deprivation forced hundreds of thousands of people to abandon their homes to seek food. At least 250,000 Sudanese died; some Western relief workers put the figure at 500,000 (*Denver Post* 1992).

Droughts do not last forever. When rainfall returns, so do the people. Sudan and its neighbor, Ethiopia, have both experienced drought conditions. Sometimes people move from one country to the other for better land. Then, when the crisis is over, they return to their home country.

There have been enough good years that, overall, Sudan has had more people move into than out of the country. Until the 1970s, Sudan grew enough food to feed all its people. Either the 1980s drought was more severe than ever or there are other forces at work that make people hungry in Sudan. The next lesson will look at other reasons why people are hungry in Sudan (Niblock 1991).

10. Do you think the Sudanese will be able to return to their homelands once the rains return? Why or why not?

How do political and economic conditions lead to hunger in Sudan?

Objectives

In this lesson, you will

- Connect Sudan's history to its civil war in the 1980s and 1990s.
- Understand how economic development problems contribute to hunger.
- See how foreign debt prevents Sudan from solving its hunger crisis.

Glossary Words

animism

colony

desertification

marginal land

How does Sudan's history help explain today's hunger?

Starting around 300 B.C., Egypt began a series of invasions into what is now northern Sudan. By 1821, Egypt conquered the collection of smaller states that then made up Sudan.

The long history of Egyptian occupation left northern Sudan's numerous ethnic groups with the Arabic language. Arabic is spoken in many countries in northern Africa. The Egyptians also promoted Islam in Sudan (Warburg 1992). *Islam* is a religion that grew out of

some of the same traditions and in the same general region as Judaism and Christianity. Followers of Islam, called *Muslims*, can be found in many countries of the world.

Southern Sudan did not feel the effects of Egyptian occupation as much as the north. Thus, today southern Sudanese are ethnically related more to Black Africans than Egyptians. Their religious preference is more likely to be Christian or animist. Animism is not a religious faith like the others. It is a belief system that is tied to nature rather than a specific god. Animism is older than Christianity and Islam and is still practiced by people in many parts of the world, including Native Americans and the Inuit of Canada.

Rule by Egypt lasted until 1881, when a Muslim revolt ousted the foreign rulers. A 17-year period of relative peace and independence was broken in 1898, again by Egypt. At the time, Egypt was under British rule, so Sudan became a British colony. Like many former colonies of European nations, Sudan gained its independence following World War II, in 1956 (Rand McNally 1989).

Colonial powers like Britain sometimes built facilities such as bridges, roads, rail lines, and sewers in their colonies. The British, however, did very little to build such facilities in Sudan. Also, they were very reluctant to develop the water resources of Sudan's part of the Nile. Had they done so, it would have meant less water for Egypt, downstream from Sudan. Britain had more money invested in Egypt—in the hopes of gaining more profits—so, they did little to develop Sudan (Allan 1992).

Introduced by the Egyptians, Islam is the primary religion in northern Sudan.

How did the civil war in Sudan lead to hunger?

During times of civil war, a country can become severely stressed, or even completely collapse. As in the American Civil War of the 1860s, the Sudanese civil war of the 1980s and 1990s is a struggle between two regions of the country (Figure 4 below).

	Government Forces	versus	**Sudanese People's Liberation Army (SPLA)**
Who			
Where	Northern and Central Sudan		Southern Sudan
Religion	Strict Islamic government		Christian (particularly political leaders) and Animist
Goals	Impose Islamic law and extend Islamic influence into neighboring states		Maintain traditional beliefs and customs. Promote economic development and stop the spread of Islam into southern Sudan.
Resources	Sufficient money and weapons imported from China and Iran		Little money or power. Some military support from the United States.
Impact	Blocks foreign food shipments. Declared holy war on non-Arab Nuba region in north.		Blocks foreign food shipments. Splits within SPLA aggravate problems in south.

Figure 4 The civil war in Sudan.

Source: Warburg 1992.

The human cost

- Three million people have left homes in the south.
- One million people have taken refuge in restricted locations.
- Hundreds of thousands of people were left scattered across the south.
- As a result of the holy war, people "arrive at the camps as living skeletons, and . . . men more than 6 feet tall weigh less than 70 pounds" (Perlez 1992).
- In an attempt by the SPLA to take the southern town of Juba back from government forces, people "found walking about at dusk or dawn are shot at sight. Young men and educated persons are picked up by the security guards and are never heard of again. Some slaughtered bodies have been seen floating in the River Nile" (Perlez 1992).

1. How have parties to the civil war made the hunger problem worse?
2. Why has there been widespread homelessness? Why does this make the hunger problem worse?
3. How does a civil war, or any war, affect a country's facilities such as roads, drinking water, and bridges?

How does Sudan's poor economy contribute to hunger?

Three problems help explain Sudan's hunger. Sudan has limited land for growing food. It also has a rapidly expanding population and large debts to foreign countries. Here is a closer look at these problems.

Agricultural resources

Sudan's economy is heavily dependent upon the export of cotton. This means that the country earns most of its wealth through the sale of this one item. Since cotton isn't a highly valuable product like manufactured goods or oil, Sudan isn't a rich country.

At present, the only way Sudan can increase income is to grow more cotton. If the Sudanese want to grow more cotton, they must use land normally used to grow food. Food then becomes more expensive.

The farmers in Sudan try to grow more food in response. However, the good land has already been taken to grow cotton. So, farmers turn to land that is drier and less fertile. Gradually, this marginal land becomes prone to wind erosion and desertification (Niblock 1991). Desertification, the process of turning grassland into desert, can then spread to good land as well. Unfortunately, for Sudan, trying to solve one problem creates others.

4. How does cotton dependence hurt the Sudanese economy and make hunger worse?
5. Why is dependence on one agricultural export risky?

Population growth

Population growth can either help or hinder a country's economy. Growth can be good if there is already a prosperous economy that requires an expanding work force. More people means more consumers, further stimulating economic growth. On the other hand, if the population grows faster than the economy creates good jobs, the people will suffer.

> During the past three decades, Sudan's population has grown by an average of 3 percent per year. In that same period, the economy seldom expanded more than 2 percent per year (Allan 1992, page 181).

6. Why might more people be hungry under poor economic conditions?
7. In order for the Sudanese to see a real increase in their standard of living, what will have to happen with the percentage of economic expansion?

Foreign debt

Like many developing countries, Sudan has sought the financial aid of neighboring states, developed countries, and international banks. After Sudan supported Egypt's 1979 peace treaty with Israel, other Arab nations withdrew or severely cut back their aid and development projects in Sudan. About the same time, rainfall and crop yields decreased. During the early 1980s, Sudan had no choice but to borrow huge sums of money from banks in other countries.

Sudan is trying to pay its foreign debts. This drains nearly half the country's wealth. Paying money back to banks means there is less to go around for projects like sanitation, irrigation, or education. Too much borrowing can keep a country poor for a long time (Niblock 1991).

8. What can Sudan do to lessen the negative effects of borrowing money?

How can Sudan gain food security?

Objectives

In this lesson, you will

- Appreciate the difficulties of ending hunger in Sudan.
- Analyze climate data to see the limits of natural resources in Sudan.

Glossary Words

climatologist
desertification
drought
famine
food shortage
marginal land

What is the "green wall" for Africa?

Worldwide attention was drawn to the Sahel . . . 20 years ago as a result of successive years of devastating drought. In order to deal with the march of the deserts, many projects were proposed, including the creation of a "green wall." Fashioned after the shelter belts in the Great Plains of the United States in response to the Dust Bowl days, some scientists proposed the planting of millions of trees across the northern and southern edges of the Sahara to stop the desert's expansion.

Many scientists attacked the scheme as unrealistic, saying the trees would act like wicks, sucking moisture from the ground and

endlessly putting it into the air. The costs in labor and money would better be used for other more realistic projects . . . [and] the project was abandoned.

Well, the [idea] is back. The Japanese government is apparently going to invest billions of dollars in a green wall a few thousand miles long and several miles thick to "save the Sahel."

Closer investigation of the problem shows that the desert is not by itself advancing to the south. What is happening is that people are misusing the land along the desert's edge. By growing the wrong crops or by preparing the land in inappropriate ways, they are creating mini-deserts, which then link up to the Sahara (Glantz 1991).

1. Why is the green wall idea questionable? You will also need to review readings in Lesson 3 to answer this.
2. Why do you think the Japanese might build a wall of vegetation at such great cost?

What is food security?

According to the Food and Agriculture Organization (FAO) of the United Nations, food security means access by all people at all times to enough food for an active, healthy life. The FAO has set three objectives to ensure that all people have food security (Food and Agriculture Organization 1990, page 17).

- Produce adequate food supplies.
- Stabilize the flow of supplies.
- Secure access to available supplies for those who need them.

Think about the conditions of agriculture, transportation, and government a country needs in order to achieve these three objectives. Then apply your thinking to answer Questions 3–5.

3. The first objective concerns the ability to grow food. Why will this objective be difficult for Sudan to meet?
4. The reliable transportation of food to markets is the emphasis of the second objective. What difficulties will Sudan have to overcome to meet this objective?
5. The third objective addresses the need to get food to the hungriest people. Why will Sudan continue to need international help to feed the hungriest?

Predicting when food shortages will occur is a new science that may help countries like Sudan avoid hunger tragedies. Political scientist Michael Glantz described how these predictions would be made.

> Famines continue to occur in many parts of the globe. In response to them, governments . . . have set out to develop what are known as famine *early warning systems.* These systems are based on the monitoring of different indicators. [These] include rainfall amounts or crop yield estimates. [They also include monitoring] increases of prices for food . . . or lack of . . . certain foods (Glantz 1993).

So far, early warning systems can't detect gradually changing conditions. Soil, for example, can very slowly become less able to support life, or it can be blown away in droughts. In another example, when populations grow a little each year, more and more people count on the soil to grow food, but it is very hard to predict exactly how much (Glantz 1993).

How can more food be grown in Sudan?

> During the 1970s, Sudan not only became self-sufficient in basic food production but also produced sufficient surplus to export considerable quantities, once a strategic buffer stock has been set aside (Niblock 1991, page 20).

In the 1970s, Sudan could feed itself, generate a food reserve, and export a surplus to other countries. What is remarkable about those

6. Why do you think Sudan was able to export food 20 years ago?

accomplishments is that Sudan could do them after an earlier civil war during the late 1950s and early 1960s.

Can more land be cultivated? As you read in Lesson 3, there is a great danger in trying to grow more food on poor land. At present, 5 percent of Sudan is cultivated. Of that small percentage, 10–20 percent is irrigated and predominantly located in the Gezira (from the Arabic for *island*) region between the Blue and White Nile (Figure 1 on page 6) (Wheeler and Kostbade 1992). Where marginal lands have been farmed, desertification and lower crop yields have occurred.

Will adequate rainfall return in the future? The amount of rainfall has varied during the twentieth century (Figure 3 on page 14). Trying to predict future rainfall is now impossible because climatologists do not know enough about the Sahel region and its weather patterns. Climatologists agree that rainfall in dry areas is extremely variable from year to year. The long historical record of the Sahel supports this view. Sudan is located between two climate extremes: the desert to the north and the rain forest to the south.

Can more land be irrigated? The prospect for drawing more water from the Nile or its tributaries is uncertain because of the rainfall pattern. There are other reasons that would make taking more water from the Nile rivers difficult for Sudan. Look at Figure 2 on page 11 and answer the following question.

7. How does the presence of the Nile rivers in other countries affect Sudan's ability to take more water for irrigation?

How could a political solution ease the problem of hunger?

"Drought doesn't kill people, politics does," said William Garvelink, a disaster specialist involved in Somalia relief for the U.S. Agency for International Development (Hiltzik 1992).

The most immediate political problem to be resolved is to find a way to end the civil war between the government and the SPLA. Thus far, it appears that there are three ways to resolve the conflict.

- The government repeals restrictions of Islamic law for southern peoples, who would be allowed to initiate their own regional government, and become semiautonomous from the north.
- The south secedes from Sudan, creating its own independent state and taking with it the largest share of the country's oil, timber, water, minerals, and agricultural land (Niblock 1991, page 128).
- The southern peoples accept Islamic law.

8. Which of these three resolutions to the conflict would you advocate for Sudan and why?
9. Which resolution do you think is most likely to be chosen and why?

How will the elimination of poverty increase food security?

Poverty—not lack of food production—is the chief cause of hunger, malnutrition, and premature death from hunger-related diseases throughout the world (Miller 1992, page 371).

Most hungry people are poor people. Even in times of acute famine, there is often sufficient food for the population, but sections of that population are too poor to afford it (Tarrant 1990, page 237).

"For the next 10 years, hunger will continue to plague the world because poverty will continue."

For the next 10 years, hunger will continue to plague the world because poverty will continue. Most poor people are rural. Reduction in poverty will depend on agricultural development. No amount of industrialization can hope to employ more than a small fraction of this poor population. An important justification of policies for agricultural development and food self-sufficiency is the need to reduce this rural poverty. An additional advantage of rurally-based development policy is that it will also provide the increased food supply that will be demanded as poverty is reduced. Policies aimed at a reduction in rural poverty are effective in increasing food security at an individual and national level (Tarrant 1990, page 38).

10. Based upon these viewpoints, what is the connection between poverty and hunger in Sudan?
11. Reducing hunger would mean increasing people's income. Why is it difficult for Sudan to increase income?

Some developed countries have significant numbers of poor people. As was the case for the poverty-stricken of Sudan, the poor of relatively wealthy countries face hunger, as you will see in the next lesson.

Why is there hunger in Canada?

Objectives

In this lesson, you will

- Identify reasons for household-scale food poverty in Canada.
- Compare causes of hunger in a developed country with those in a developing country.

Glossary Words

food bank

scale

welfare

Why are there hungry people in a wealthy country?

While hunger in a poor, developing country such as Sudan may be understandable, hunger in Canada is almost beyond belief—for those with enough food, that is. "How is it possible," you may ask, "that one of the world's richest countries (Table 1, page 8) and a major food exporter has people who are hungry?" You might conclude: "With so much food easily available at any supermarket, and with so much government assistance, those who are hungry must want to be."

Jessica's dreams

Jessica is playing with her dolls in front of her home in the west end of Toronto.

"What do you want to be when you grow up?"
"A mother."
"I'll have kids . . . and feed them nice things."
"What kind of things?"
"Meat and salad."

(Jack 1990, page 16)

The story of how Jessica's family became poor is not uncommon. Some children are born to poor families that have been poor for generations. But Jessica's family recently fell into poverty.

After Jessica's parents separated, her mother, Sue, found a good job, an apartment with reasonable rent, and a baby-sitter. Then Jessica and her baby brother became sick with numerous colds and infections. The landlord sold their apartment, which forced them to move into a more expensive place. The baby-sitter then quit, so Sue had to find day care instead. Apartment rent and day care together would be almost as much as Sue's salary. With little money for food, clothing, or other necessities, what would they do?

Sue decided she would quit her job!

Canada, unlike Sudan, is a relatively wealthy country and can afford to help people who can't make ends meet. But in order for the government to help Jessica's family, Sue *had* to quit her job. That way, she could declare herself unemployed and ask for public assistance. While they have less money now, at least Sue doesn't have to pay for day care. That leaves them with more money to buy the necessities they could not have with Sue working. Still, there are times when they can't buy enough food and that bothers Sue, but for now, it's the best she can do.

How is it possible that one of the world's richest countries has people who are hungry?

1. How are the causes of Jessica's hunger different from the causes of Angelo Chol's hunger in Lesson 1?
2. If given the choice, would you accept poverty-level wages or go on welfare?
3. List some of the ways Jessica's life with hunger are similar to Angelo's.
4. How is her life with hunger different from Angelo's?

What is the human cost of hunger in Canada?

As described in Lesson 1, the human cost of hunger for Angelo Chol and other Sudanese is severe, leading to malnutrition and death. Hunger in Canada or the United States typically does not result in such dire consequences. Still, some people in developed countries suffer permanent physical and mental scars from malnourishment. Jessica Ross's family is part of the 10 percent who meet their basic nutritional needs by going to a food bank (Jack 1990).

Dr. Chandrakant Shah, professor of preventive medicine at the University of Toronto, described the consequences of hunger to children in Canada when he said, "we see subtle starvation—and the effects are also subtle." These effects include hyperactivity, inattention in school or at home, or a general restlessness. Often, parents and teachers do not see hunger as the cause of these symptoms. If not recognized early, subtle starvation can lead to stunted growth, low grades, and fewer opportunities to live a long, productive life (Underwood 1990).

If an adult has a low-paying job and has a child, the poverty and hunger conditions are passed on to a new generation. In this way, poverty and hunger continue even in the most developed countries.

5. The United States is a wealthy country. What evidence of hunger have you seen in the United States?
6. How do you think families can escape hunger?

Why is there hunger in India?

Objectives

In this lesson, you will

- Identify some of the reasons why individuals are hungry.
- Explain how gender discrimination can lead to hunger.

Glossary Words

calorie
discrimination
famine
gender

Is India a poor country?

Poverty is common in India, yet there is no widespread famine or civil war. But there is hunger in India resulting from poverty. Unlike Canada, more girls than boys go without food in India. To find out why, this lesson takes a look at what happens *within* Indian families.

Examine Table 1 from Lesson 1 on page 8 to see how India compares with other countries on indicators of social and economic development.

1. How does India compare with Sudan and Canada in terms of social and economic conditions?
2. Based upon the level of caloric intake, is there evidence of food shortage in India?

How does poverty in India affect the lives of girls and boys?

Study the data in Tables 4, 5, and 6 below and on the next page. Do these data suggest differences in the quality of life of men and women in India?

Table 4 Adult literacy rates (percentage)

Country	Females	Males
India	25	47
Canada	over 95	over 95

Sources: World Bank 1991; 1992.

3. For India, in which group are there more people who can read, males or females?

Table 5 Males per thousand females in selected areas

Country	Males
India	1073
Europe and North America	952
China	1010

Note: The number of males per thousand females for Europe and North America is considered normal because men live a shorter life on average.

Source: Momsen and Townsend 1987.

4. In which areas are there more males than females?

Table 6 Life expectancy in selected countries (1990) (average number of years lived)

Country	Males	Females
Canada	74	81
India	60	58
World average	64	67

Source: World Bank 1992.

5. In which country do males live longer than females? How does this compare to the global average?

Look at your answers from Questions 3, 4, and 5 and answer the next question:

6. Do you think there are important differences between the lives of boys and girls in India? Why?

Indian girls face hunger

Eleven-year-old Tapati Das . . . [was told by] her grandmother, . . . "Tapati, get some firewood from the bush before you go to school." Tapati retorted, "I won't." Tapati's father came out of a room, saying, "You know very well how to swallow food without working for it. If you don't work, don't bother to eat!" Tapati left home that morning without eating, but she was given a piece of bread in the afternoon at school.

When she returned home her aunt took her affectionately by the hand and led her to the kitchen where her grandmother served her a hot meal of rice. Tapati ate silently. "You must have been very hungry," her grandmother said (Rohner and Chaki-Sircar 1988, page 92).

Eleven-year-old Juthika woke up at six o'clock in the morning, just as her father was leaving for the field after his morning tea and puffed rice. Juthika's mother gave her raw tea mixed with jaggery (palm tree sugar) and one biscuit. Juthika's younger sister had already had a biscuit and asked for another. The mother gave her a broken piece, and Juthika complained, "I want more too. Why did you give me less?" Her mother responded, "I can't give you any more."

Nine-year-old Chhabi came home at four o'clock in the afternoon, after selling [some rice] for a rupee [about 10 cents]. Her mother demanded, "Give me the rupee." Chhabi refused, saying, "I am going to the store. I won't give it to you." Angered, her mother retorted, "If you won't give it to me, I won't serve you any food" (Rohner and Chaki-Sircar 1988, pages 89–91).

7. How does the hunger situation faced by these Indian girls differ from that of Angelo Chol (in Sudan) or Jessica Ross (in Canada)?
8. The Indian girls were not given food just because they were hungry. What did they have to do to get it? How would their situation differ in the United States?
9. How do the stories of Tapati Das, Juthika, and Chhabi compare with your answer in Question 6?

You may have noticed that this lesson has stressed hunger faced by girls. But there is also age-discrimination at work when it comes to hunger. Notice that adults control food in families. As in the United States and Canada, children in India make up the bulk of the poor and hungry (Jack 1990). Why is there also gender discrimination in India?

Are boys better?

According to Indian tradition and, until recent years, by law, only males could inherit . . . property. In an agrarian society, where land is the primary form of wealth, having at least one surviving son is the only sure way of keeping it in the family. Tradition

also holds sons responsible for providing their parents, particularly their mothers, with a secure future; widowed or divorced women without adult male sons to support them invariably face . . . [destitution].

Moreover, sons [gain] another form of economic wealth when they marry. Daughters-in-law move into the homes of their husband's parents, bringing with them not only dowries but also a form of income in their ability to perform work and produce grandchildren.

Daughters, by contrast, are viewed as a drain on household income. Not only is the work they do in their parents' homes not valued by society, but when they marry they take with them a dowry that their parents may be forced into debt to provide. Although laws governing inheritance and other property rights have been formally changed, government enforcement and judicial support for carrying them out remains weak, posing no match for the strength of cultural practice in denying women access to productive resources such as land and credit (Jacobson 1991, page 21).

What can be done for Indian girls and women?

Indian society values males, young or old, more than females. One of the consequences of this favoritism is unequal distribution within the home of not only food but other resources as well. For girls and women, this situation will not improve as they get older.

During the 1940s, the Indian leader Mahatma Gandhi advocated the independence of India from Great Britain. He equated the treatment of Indians by the British with the kind of discrimination women in his society have traditionally faced. He said:

> I am uncompromising in the matter of women's rights. In my opinion she should labour under no legal disability not suffered by men. I should treat the daughters and sons on a footing of perfect equality (Gandhi 1959, page 7).

10. Do you think that gender discrimination occurs in other countries? If so, where?
11. Do you think that gender discrimination results in hunger for some girls in other countries? If so, where?

What can be done about hunger?

Objectives

In this lesson, you will

- Distinguish between hunger and food security on different scales.
- Recognize that hunger on one scale causes hunger on other scales.
- Identify the strengths and weaknesses of the Bellagio and Medford Declarations.

Glossary Words

discrimination

food deprivation

food poverty

gender

scale

Why is the concept of scale important?

Geographers study problems on different scales. A problem that may be clearly visible on the local scale may seem to disappear if viewed from the global scale. This situation works the other way as well: Not all global problems can be seen on smaller scales.

Examining different places on different scales can help you see how places function. For example, a city is one kind of *place* but is made up of many objects like buildings, roads, and people. A neighborhood in a city is also a place but is made up of fewer objects than a city. A neighborhood is also spread over less area than the whole city.

The neighborhood exists on a smaller level of scale than a city. So, a place on a large scale has more objects and covers a larger area than a small-scale place.

1. What kind of place is larger in scale than a city?
2. What is smaller in scale than a neighborhood?

How can hunger be viewed on different scales?

Do you now know enough about hunger to understand why it exists? Geographers begin to solve problems by describing them carefully. The geographer, Robert Kates (1992b), studied hunger on three separate scales. He showed that scales of hunger are interrelated.

How can problems on different scales be related to each other, or affect each other in some way? Think about the city and neighborhood again. A neighborhood is made up of a few city blocks and all the houses, businesses, and schools found in those blocks. Now, suppose the city wants to build a new airport close to a neighborhood. The people living there probably won't like the noise and traffic caused by the airport. But, the neighborhood residents may not be able to stop construction because they are so few in number. The neighborhood's small scale may make it seem isolated, but it is still tied in many ways to the larger city. In such ways, scales are said to be interrelated. Decisions made on large scales will affect smaller-scale places.

3. What decisions do you think your country has made that have affected your neighborhood?
4. What decisions do you think your city has made that have affected your neighborhood? Other neighborhoods?
5. What neighborhood decisions or problems have affected your city?

Hunger is something that happens to a person or group of people. You can see reasons for hunger on different scales. You can see the effects of hunger on people and places on different scales. The reasons for hunger also involve how people treat each other.

Things that happen on one scale will affect what happens on others. For example, your family's income is tied to the economic health of your city and your city's economic health is tied to the economic health of the country. This does not mean that if the country does poorly, your family will lose income. However, your family is more likely to lose income if the entire country or your city goes through an economic decline. The scales of hunger operate in a similar manner.

Throughout this module you have looked at different places in the world that have hungry people. In Sudan, people were hungry for reasons not found in Canada or India. Now you will explain hunger with the use of regional, household, and individual scales based on Kates's ideas.

The regional scale

You can go hungry if a war or natural disaster on the regional scale decreases shipment of food within your state or region. Such a food shortage may then send households into food poverty, and from there, individuals into food deprivation. During the 1993 floods in the U.S. Midwest, the swollen rivers made barge traffic impossible. Even highways and railroads were closed. Without vehicles to carry grain and other products, many people went hungry. Regional-scale hunger is called *food shortage* or *famine*.

The household scale

You can go hungry if your household income is too low to buy enough food for everyone. Sometimes, poor families ask the government for help to get food. If the government can't provide food for them, they may go hungry. A family that faces discrimination based on their skin color or ethnic background may not get enough food. This happens when employers don't want them or their government won't help them because of their background. Household-scale hunger is called *food poverty*.

The individual scale

Finally, you can become hungry if, on the individual scale, you are deprived of food because of abuse, neglect, or gender or age discrimination. Unequal treatment is the heart of what discrimination means. Individual-scale hunger is called *food deprivation.*

6. Why do some people go hungry even if their family or household can get enough food?
7. If a condition of regional food shortage exists, can some individuals or households avoid hunger? If so, how do they do it?

How are the scales of hunger interrelated?

Suppose there is a regional war or natural disaster like a hurricane. These kinds of situations will mean workers can't go to work. A family will not have enough money to buy food if no one can work. If a family has only so much food to go around, some family members may have to go without. In this case, the individual family member is hungry because of a situation on the regional scale. The regional scale affected the household scale, causing poverty. The poverty condition forced the family to make a choice about who would get food. Any one family member who did not get food would then face hunger on the individual scale.

Examine Figure 5 and notice how one scale of hunger can lead to the next. Whether the cause for hunger is found on a regional or a household scale, it is always an individual person who is affected.

Millions of people suffer from malnutrition.

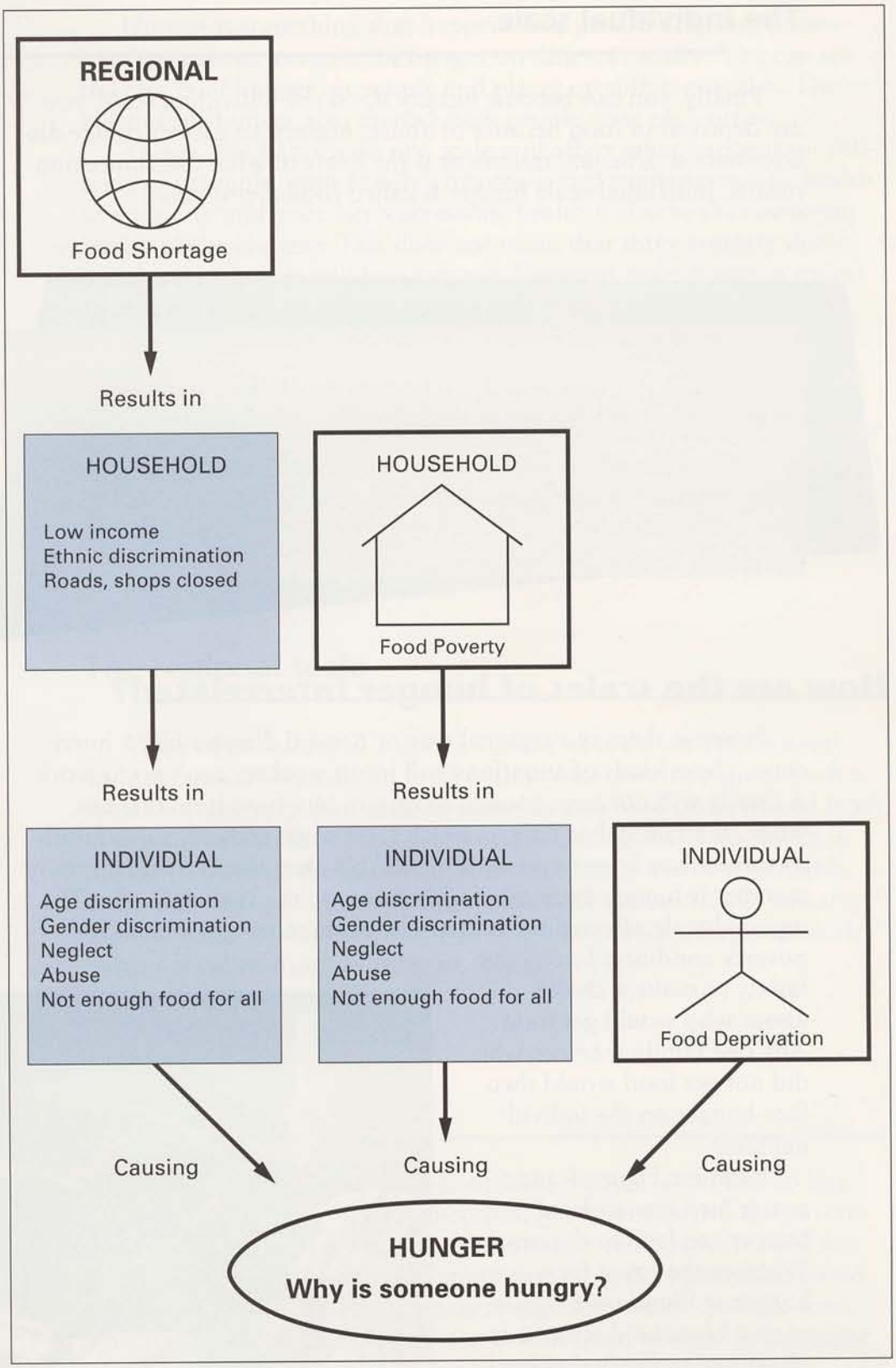


Figure 5 The interrelated scales of hunger.

Source: Kates 1992b.

Hunger can be found in every region and in every country of the world. It can be found in every era of human history and will likely continue for some time. But hunger conditions are not equally likely to happen in all places at all times. Rather, hunger is found in certain places caused by reasons at different scales.

Reducing hunger means attacking the problem at the different scales. What works in Canada will not work in Sudan. Hunger *can* be reduced. Many success stories have already been written. If we can recognize that the reasons for hunger vary from place to place and on different scales, then perhaps we have a good chance of solving the problem.

8. How can an understanding of regional, household, and individual scales help solve hunger?

How can hunger be reduced?

Isn't there already enough food to go around? In Lesson 1, it was stated that if we add up all the calories of food produced in the world and divide that by the number of people, there are slightly more than enough calories to go around. But calories alone do not make for good nutrition. A diversity of foods ensures proper nutrition. This kind of diet is found in only a few regions, such as North America, Europe, and Japan.

Although 6 billion people could be fed at the lowest level of nutrition, only 2.5 billion could be fed the best diet. Currently, under 1 billion even have the chance to be fed the best diet (Kates 1992a).

9. If 2.5 billion people could be fed at the highest level of nutrition and under 1 billion now have this level, how do you account for the difference?
10. Why do Japan, North America, and Europe have enough food to provide a nutritional diet?

Finding solutions to global problems often requires that people become aware of the problem. The use of declarations serves this purpose. Declarations are issued by the United Nations, groups of scientists, or other assemblies of concerned people.

Examine the hunger declarations in Figure 6 below.

The Hunger Declarations

The Bellagio Declaration: Overcoming Hunger in the 1990s

- Eliminate deaths from famine.
- End hunger in half of the poorest households.
- Cut malnutrition in half for mothers and small children.
- End all iodine and vitamin A deficiencies.

The Medford Declaration to End Hunger in the U.S.

- Independence, self-reliance, and income security.
- Conversion to a peace-time economy.
- Support families and vulnerable households.
- Revised federal poverty standard.

Figure 6 The hunger declarations.

Source: Kates 1992a.

11. What are the differences between the Bellagio and Medford Declarations?
12. What do you think should be added to the Bellagio Declaration to help reduce hunger in Sudan and India?
13. What do you think should be added to the Medford Declaration to help reduce hunger in Canada?

What can you do about hunger?

Contact one of these sources if you want to get involved in ending world hunger. You may also want to contact your local community to volunteer in food-share activities and soup kitchens.

Oxfam America
115 Broadway
Boston, MA 02116
(617) 482-1211

Save the Children
The National Volunteer Program
54 Wilton Road
P.O. Box 950
Westport, CT 06881
(800) 243-9075

Foster Parents Plan
115 Plan Way
Warwick, RI 02866
(800) 556-7918

Partners in Child Survival
c/o InterAction
P.O. Box 91460
Mobile, AL 36691

Glossary

Animism A belief system held by many different groups of people in the world. The belief that natural forces such as wind, fire, and storms are usually controlled by gods and goddesses.

Calorie A measurement of heat energy. One calorie will raise one gram of water 1° Celsius.

Climatologist A scientist who studies temperature and precipitation patterns over time, usually over the course of a year or longer.

Colony A region or territory that is under the control of another country. Colonies usually provide resources back to the dominant country.

Desertification The growth of deserts due to poor farming practices.

Discrimination The favoring of one group of people over others. Gender discrimination means that one sex (male or female) is given special treatment that is denied to the other group.

Drought A natural shortage of water, caused by several years of less-than-average rainfall.

Famine See **food shortage.**

Food bank A place where food is stored and used if food supplies drop sharply.

Food deprivation A condition in which a person becomes hungry because of some form of discrimination.

Food poverty A condition in which a household cannot afford enough food for everyone.

Food shortage A condition in which a region has less food than needed to adequately feed the people. Often due to events such as civil war or drought.

Gender A term referring to a person's sex, either female or male.

Gross national product (GNP) The total value of goods and services produced in a country.

Marginal land The poor soil that has been used for farming. Marginal lands produce much less food and are vulnerable to erosion and desertification.

Scale This term has a mathematical meaning in maps, but in this module, it refers to the size of the area under study. Global scale covers the whole world, while national scale is limited to the country.

Starvation When a person does not get enough of the right kinds of food over a long period of time, vital organs fail, resulting in loss of bodily function and affecting mental health.

Welfare Public assistance to needy individuals in the form of food, housing, clothing, and/or money for basic living expenses.

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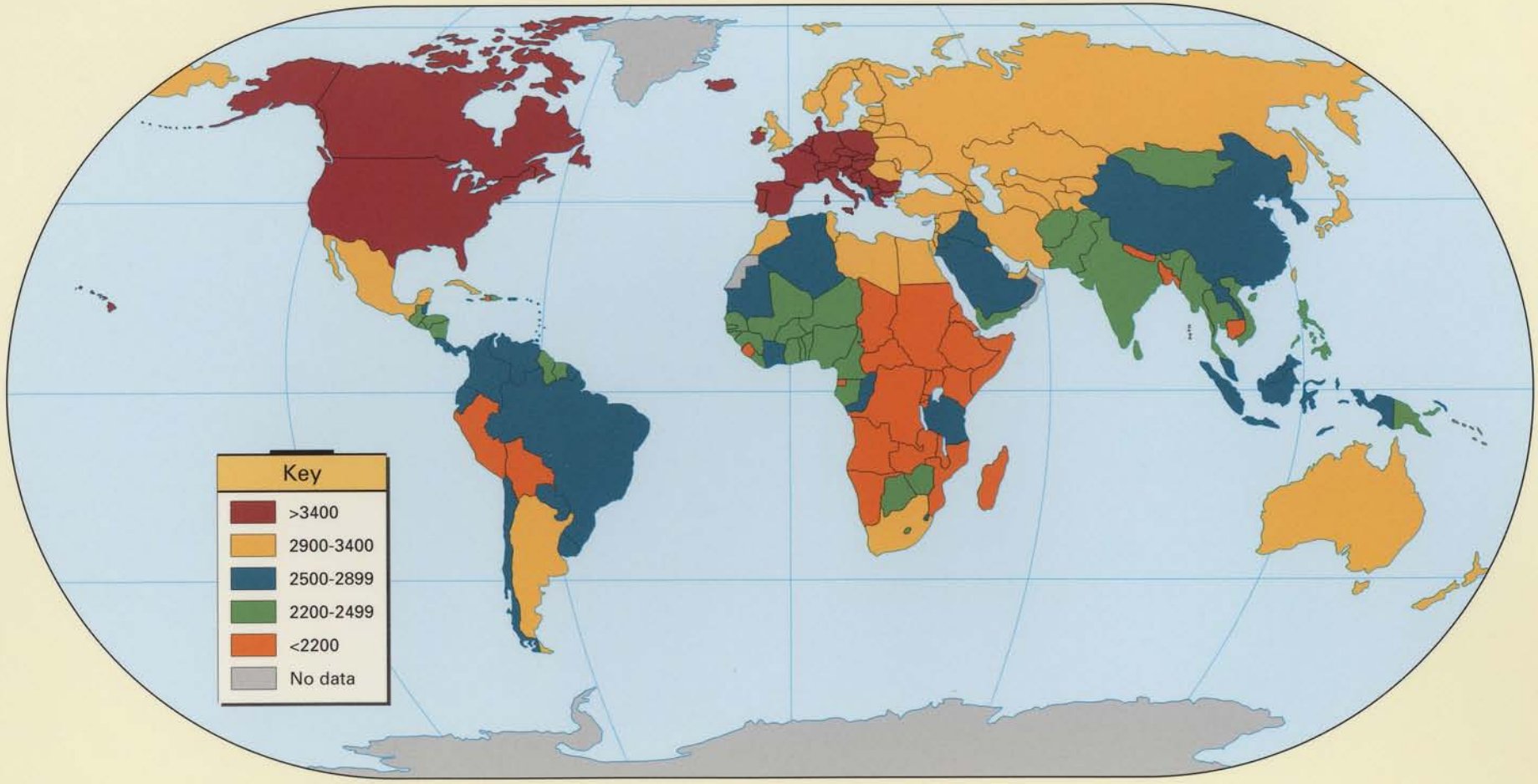
1 2 3 4 5 WK 99 98 97 96 95

Map 1

WORLD DAILY CALORIC INTAKE PER PERSON



Primary Data Source: World Development Report (1992)

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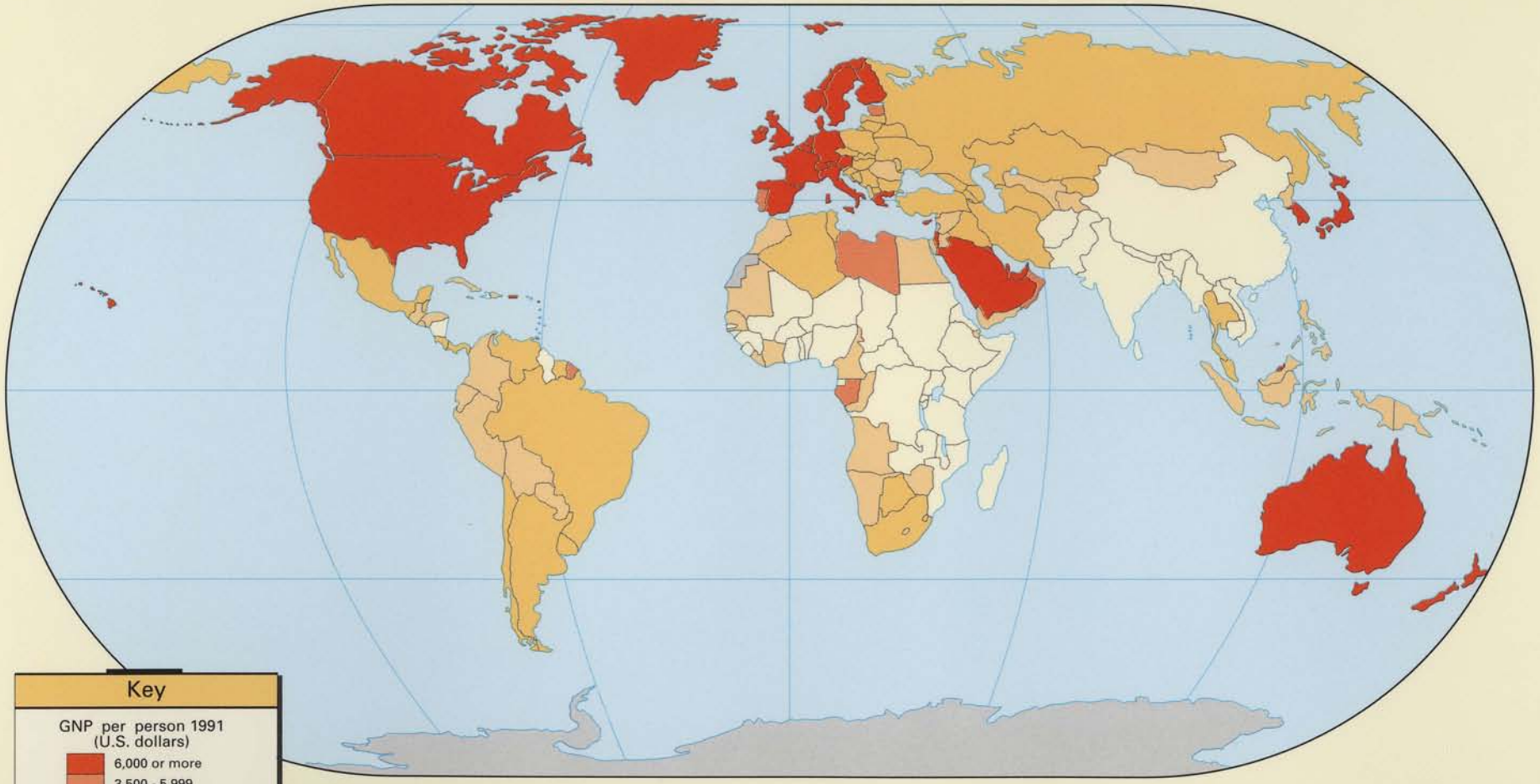
Map 2

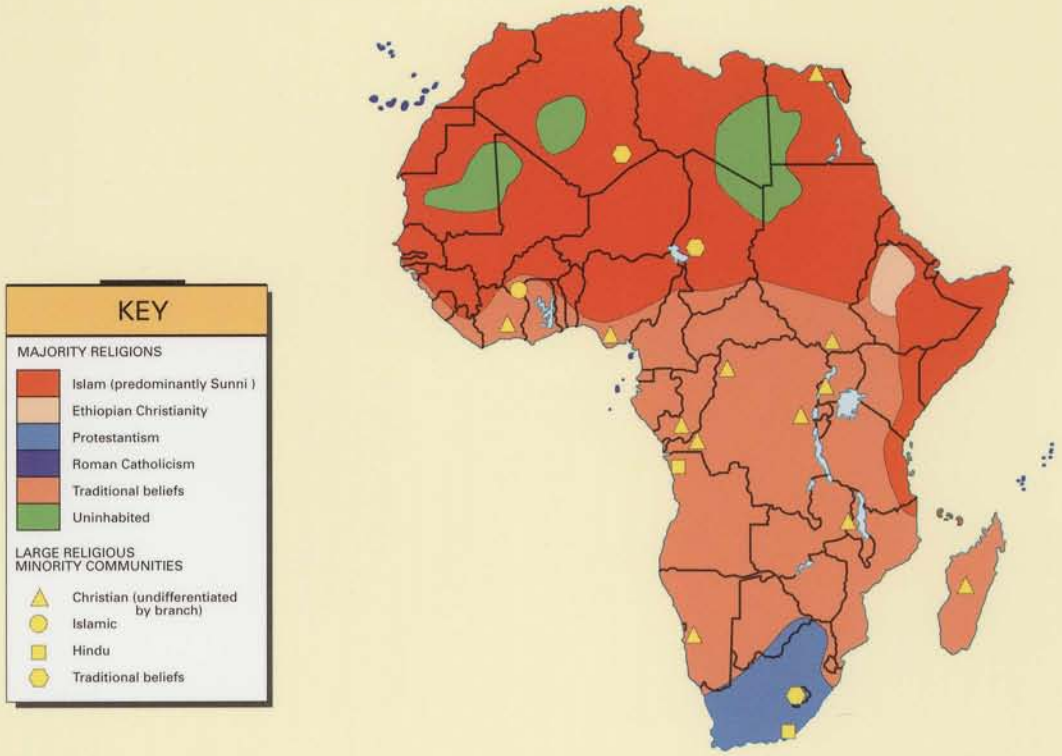
WORLD GNP PER PERSON



Primary Data Source; World Bank Atlas

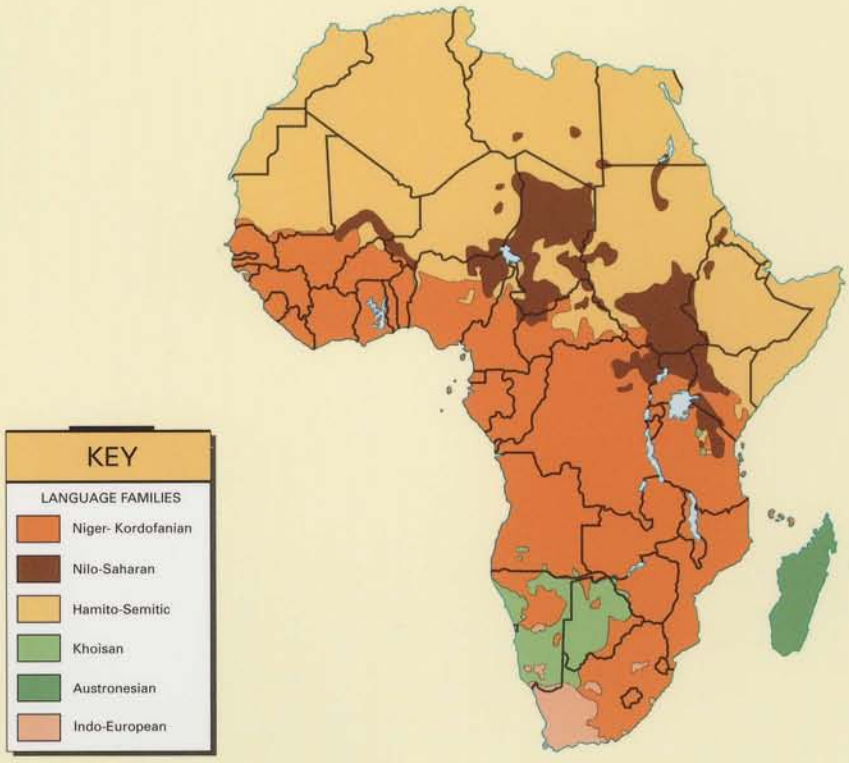
Map 3

MAJOR RELIGIONS OF AFRICA



Map 4

MAJOR LANGUAGE GROUPS OF AFRICA



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Map 5