

2

intermediate level

lesson 2

Why are People Hungry and Malnourished?

The lesson has been designed to be covered in 45 minutes, but it can be covered in greater or less detail to fit the needs of the class. Teachers are encouraged to cover all objectives and content areas.

For each objective, a variety of activities and discussion points are provided from which teachers can select those most appropriate for their students.

The materials for each lesson can be found in the Materials section beginning on page 75.

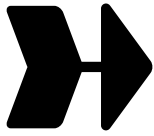


Information for teachers

Lesson 1 presented information on the importance of food for life and health and explained that hunger exists in most areas of the world. Students should understand that hunger and malnutrition are caused and perpetuated by a number of factors, all of which need to be addressed to ensure that all people get the food they need for an active and healthy life. In Lesson 2, students can examine food systems as a factor in world hunger. Students will then be introduced to the concept of food security, using the example of the three pillars of food security.

Objective 1 helps students to understand that hunger exists, in part, because the process of getting food is complex and the system can break down at any point. Before we can solve the problem of hunger, we must understand where food originates and the processes that some foods go through before we eat them. The food system is presented using a story to illustrate basic concepts, with discussion questions included.

Objective 2 builds on the concepts provided in Objective 1 relating to the food systems that feed people and introduces the concept of food security – having access at all times to the food we need to lead an active and healthy life. It emphasizes the need to ensure that all people are well nourished and food-secure. The three pillars of food security – availability, accessibility and use of food – are introduced to provide a basis for action against threats to the food supply.



Objective 1 To understand the food system that feeds people

Materials



Story: The Story of Miguel's Tomatoes

Picture: Steps in the Food System

Table: Food System Chart

Concept

The system that provides food involves many steps

Content



Steps involved in the food system include:

- Getting ready to grow the food
- Growing the food
- Moving food from the field
- Processing, selling or storing the food
- Preparing and eating the food.



Each of these steps involves many processes and considerations. And each process may involve many people, such as bankers, agriculture suppliers, farmers and farm workers, truck drivers, food handlers, millers and bakers, as well as different conditions, such as weather, roads and economic and political stability. It is this complexity that makes our food supply vulnerable.



The number of steps involved and the processes in each step depend on the specific situation for each community and family. Local food systems, including home gardening and small farms, may decrease the complexity of the processes involved, or even eliminate steps such as moving, processing or selling.



Raising small animals and growing crops can increase family security by providing sufficient food for the family, as well as income from selling the surplus.



However, even a home garden may depend on other people to supply certain needs such as seeds, tools, fertilizer, milling of grain or rental of land and farm machinery. And all farms, large and small, are vulnerable to weather conditions. See the table *Food System Chart* for the factors involved in each of the steps in the food

system and a comparison of some of the differences between local and commercial food systems.




The Story of Miguel's Tomatoes is designed to trigger discussions about each of the steps in the food system. It can be read to younger students to illustrate how food is grown, transported and processed.




Students can read the story alone or in groups. The discussion can be more detailed for older students, and include asking them to imagine all of the additional processes involved with each step in the journey of the tomatoes and what would happen if things went wrong (no rain, Miguel got sick and could not care for the plants, the truck to the city




broke down and the tomatoes spoiled, etc). The teacher can lead a discussion about the ultimate effects of a breakdown at any stage of the food system on the food supply of a community.

 If *The Story of Miguel's Tomatoes* is not appropriate for the age group, an alternative activity is included which traces local foods through the food system.

Activities

 Ask students where we get our food. (If they say the grocery store or market, ask them where the grocery stores and markets get the food.) Tell them that food starts with the farmer.

 Now tell them that you are going to read a story about a farmer and his tomatoes (or assign students to read the story and fill in the *Food System Chart* table). Ask them to think about all of the steps that the tomatoes go through in the story. Either as a group or individually have students discuss and add more factors to the *Food System Chart* as the story is read. Read *The Story of Miguel's Tomatoes* out loud to the students, or have them read in groups or individually.

 Discussion of *The Story of Miguel's Tomatoes*:

- Hold up the picture *Steps in the Food System*. Tell the students that there are five major steps that must happen for food to be available:
- Getting ready to grow the food
- Growing the food
- Moving food from the field
- Processing, selling or storing the food
- Preparing and eating the food.

Ask students to think about these food system steps in the story about Miguel and his tomatoes.

Getting ready to grow the food:

- What did Miguel need for his tomatoes? Seeds, fertilizer, plough and land. Anything else?
- What would happen if these were not available? Could Miguel grow tomatoes without these supplies?

Growing the food:

- What did Miguel need for the tomatoes to grow? Sunshine, rain and his hands to work, weed and care for the tomatoes (labour). What else?
- Could Miguel's tomatoes have grown if these were not available?

Moving food from the field:

- Where were Miguel's tomatoes moved to after he and Ana picked them?
 - Some were taken to Miguel and Ana's house to be eaten for dinner or to be put into jars to store.
 - The rest were taken to the village market by Miguel in a cart.
 - At the village market they were loaded into a truck and taken to the city.
 - Some were taken to the city market.
 - The rest were taken to the food processing factory.





- How far did the tomatoes travel for Miguel and Ana's dinner?
- How far did the tomatoes travel to get to the city? How did they make this journey? (Miguel's cart, Pedro's truck).
- What would happen to the tomatoes if the cart or truck broke down on the way?

Processing or selling the food:

- How did Ana process the tomatoes?
- How did Miguel sell his tomatoes?
- How did Pedro re-sell the tomatoes?
- What happened to the tomatoes at the food processing factory?
- Why are these steps important

in a food supply? What would happen if foods could not be processed to be available later?

Eating the food:

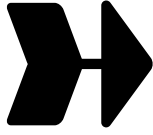
- Discuss how people need money to buy food unless they grow their own as Miguel and Ana do.
- Discuss how people must understand how to use the food safely and choose foods that keep them healthy.
- Discuss the problems that could arise with each of the above steps and how the food would then not be available for people to eat.
- Discuss the difference between the tomatoes that were eaten directly by Miguel and Ana from their field and the tomatoes that came back in a can.

Storing the food:

An important concept to consider is the waste of food that happens because of pests and spoilage at the commercial and home levels. Protecting the food supply from insects, rodents, moulds and spoilage can greatly increase the amount of food that is available for people. Every year, poor post-harvest handling and contamination ruin millions of tonnes of food. Discuss how important it is to protect food from pests and spoilage and how both Ana and the food processors consider food spoilage.

 Alternative activity

Using the table *Food System Chart* as a model, develop a table in which students list the processes and considerations of each of the steps involved in the food system that they depend on for food in their community. Pick one or more commonly eaten foods and trace these from their origin as an example of how the local food system works. Discuss where the food system is vulnerable. For instance, if the food system depends heavily on commercial agriculture, what would happen if farm labour were not available, if a severe drought happened, if suddenly all of the roads leading into the city were closed, etc?



Objective 2 To understand what it means to be food-secure

Materials



Country Case Studies

Concepts

- To be food-secure means to have access at all times to the food we need for an active and healthy life
- The three pillars of food security are availability, accessibility and use of food

Content



Food security is defined as access by all people at all times to enough nutritionally adequate and safe food (quality, quantity and variety) for an active and healthy life.



We must create the conditions in which all people can secure the food they need and be well nourished in a dignified and sustainable way.



Food security is affected by a number of factors including, primarily, the food supply and access to jobs and such basic services as education, health facilities, sanitation, clean water and safe housing.



Poverty, social inequality and lack of education are primary causes of hunger and malnutrition and are major obstacles to obtaining food security.



Food security cannot be ensured only by producing more food. If, for example, people cannot afford the food that is available, if their diets lack essential vitamins and minerals or if poor handling during processing and distribution makes their food unsafe to eat, they will not have food security.



To have food security depends on three pillars, or legs of support.

- Food must be **Available**, meaning that adequate amounts of good-quality, safe food must be produced or imported at the national and local levels.
- Food must be **Accessible**, meaning that it must be distributed and available locally, and it must be affordable to all people.
- Food must be **Used** in the best way possible for each person to be healthy and well nourished (sufficient in quantity, quality and variety for each individual's needs).



To achieve national food security, a country must be able to produce or import the food it needs, and be able to store it, distribute it and ensure equitable access to it.



For families to achieve food security they must have the means to produce or purchase the food that they need and they must have the time and knowledge to ensure that the nutritional needs of all family members are met.





Building on an understanding of the complexity of the food system, students can analyse specific situations faced by countries in order to determine if hunger issues relate to Availability, Accessibility or Use of food. Understanding the associated factors is a first step in developing solutions.




Valuable lessons can be learned by looking at countries that have been able to reduce hunger and by contrasting their situations with those of countries that have declined in nutritional status. Contrasting the situations and looking for patterns can illustrate the factors that contribute to the problems and solutions of hunger around the world. Case studies of countries with problems with hunger are provided.

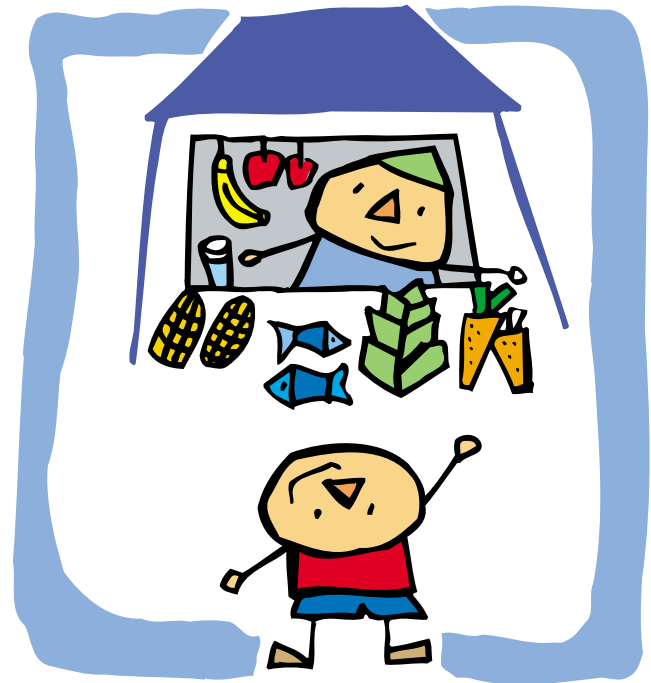
Activities

 Discuss how conditions are vastly different from one place to another, and how certain combinations of situations create problems of food security. By analysing countries with varying degrees of change in their food security situations, and comparing the situations that exist in each country, trends can be identified that indicate the future of food security in each country.

 Country case studies are provided that contrast past and present conditions in selected countries where changes in hunger and food

security patterns have taken place over the past few decades. The case studies are presented in pairs, by region, contrasting a country that has made an impact on hunger with a country that has faced setbacks in feeding its people. Assign individual students or groups of students to read one pair of case studies each, or discuss selected cases in class as a group discussion. With input from the teacher, as appropriate, students should discuss the factors causing the current situation related to hunger in each country. Have students discuss the conditions related to hunger in terms of Availability, Accessibility and Use of food.

 Building on the discussion of the food system, discuss how a similar case study would apply to their local situation.



Summary

The goal we are striving towards is to ensure that all people in the world are food-secure. Getting our food involves many steps. We must understand where our food originates in order to make the right decisions about how to feed everyone. Lesson 2 illustrated the complexity of food systems to explain the many reasons that people may be hungry, and introduced the concept of food security. After completion of Lesson 2, students should be able to state that:

- Food security means having access at all times to the food we need for an active and healthy life.
- Having food security depends on three pillars: food must be available, it must be accessible and it must be used in the best way possible for each person to be healthy and well nourished.
- The system that provides us with food involves many steps. As the complexity of the food supply increases, the possibilities of breakdowns in the food supply may become more likely.

We can work together to reduce hunger. Lesson 3 will explore what we can each do to help reduce hunger in our world.



Picture: Steps in the Food System



- Getting Ready to Grow Food
- Growing the Food
- Moving Food From the Field
- Processing, Selling, or Storing the Food
- Preparing and Eating the Food



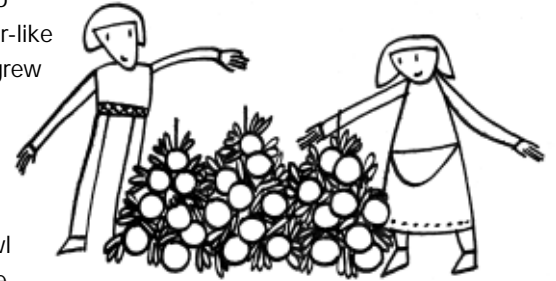
Story: The Story of Miguel's Tomatoes

The Tomatoes Grow in the Fields



The sun was shining on the field beside a small wooden house. The earth was damp with rain and rich with manure from the animals. Miguel pushed his new plough slowly back and forth across the field, making long rows that looked like tiny mountains in the dark-brown soil. Satisfied that his little mountain rows were neat and straight, he gently planted small green tomato shoots that he had raised from seeds. Many days and nights went by. Rain came and went, and the plants grew tall and thick with leaves. Miguel walked up and down the rows, caring for the plants and adding more droppings from the animals to give nutrients to the soil. One day Miguel saw small yellow flowers

peeking through the green leaves. Soon there were so many flowers that they looked like stars in the sky. And then, under each star-like flower, a tiny, round, green tomato appeared, as if by magic. The tomatoes grew and grew, and changed colour as the days went by. One by one, each tomato turned from dark green, to yellow and then to orange-red. When a tomato became large and red, Miguel knew it would be soft and juicy and ready to eat. He went up and down the rows and picked the tomatoes that were red and ready for his family to eat that day. Miguel brought a small bowl filled with tomatoes into his house. Ana, his wife was happy to see how large and red the tomatoes were and knew they would taste sweet and good. She washed the tomatoes carefully to remove the dirt, and cut them into small pieces to make a sauce for their dinner that evening.



After many days, the field was coloured with bright red tomatoes on the green plants as they stood in long, neat rows. Now many tomatoes were ready to be picked. Ana could not use all of the ripe tomatoes for dinner that night. Early the next morning Miguel and Ana came into the field carrying large flat boxes. They slowly went up and down the rows of tomato plants, gently picking the tomatoes and packing them into the boxes. Miguel and Ana loaded the boxes of ripe tomatoes into their rickety cart. Saying goodbye to Ana, Miguel slowly pushed the cart down the dusty path to the village market.



The Tomatoes go to the Village Market

The market square was busy with people unloading goods to sell. Clothing and jewellery, belts and shoes, as well as cakes and breads made early that morning, were spread out for display on tables and blankets under brightly coloured umbrellas. Eggs, meat and cheeses were being kept cool under wet cloths, and fruits and vegetables were carefully stacked into high piles. Some people, including Miguel,

unloaded their boxes on one side of the market square. Here they waited for the people who came in trucks to buy foods and other items from the village and take them to the big cities.

Miguel stood by his boxes of tomatoes and watched as an old battered truck rumbled nosily into the little market square and sputtered to a stop. Pedro waved to the villagers in the market as he jumped out of the truck and slammed the door with a noisy bang. Pedro was happy to see many





people in the market with boxes piled high with fresh, ripe fruits and vegetables. Pedro and Miguel talked about the price and quality of Miguel's tomatoes. When they agreed on a price, Pedro agreed to buy all of Miguel's tomatoes. Miguel then helped Pedro load the boxes of tomatoes into the truck. Pedro visited other people in the market and bought many more fruits and vegetables. Soon the back of the old truck was crowded with fresh fruits and vegetables raised in the village gardens. Pedro knew it was time to start the long journey back to the city. He was satisfied that he would



make a profit on the resale of the foods he had just purchased in Miguel's village. Pedro climbed into his truck, carefully started the engine, and slowly pulled out of the market square, with a friendly wave to Miguel, who was pushing his cart back to his little house.

While Miguel was at the market, Ana picked more ripe tomatoes to be made into sauce. She carefully cleaned the jars with hot water and prepared the tomatoes for the sauce. When Miguel returned from the market, Ana had many beautiful red jars of tomato sauce to be eaten long after the summer sun was gone and their fields were covered with white snow. Ana was pleased that Miguel was able to sell all of their tomatoes. She knew that they would now have money to purchase other foods and supplies they needed for the family. After the long day, Miguel and Ana were tired and hungry and were glad to sit down to their evening meal of foods they had raised in their garden, including sauce made from their bright red tomatoes.



The Tomatoes go to the Big City

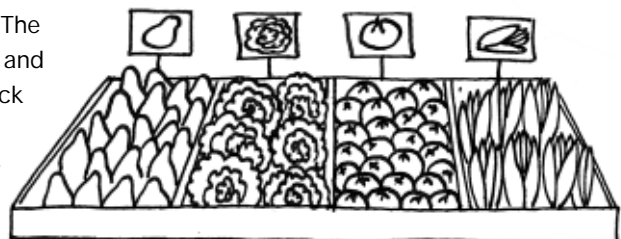


While Miguel and Ana were having their dinner, Miguel's tomatoes continued their long journey to the big city. Carefully packed in their boxes, the fresh red tomatoes rumbled along dusty roads, over wooden bridges and through small towns. Many people in the city do not grow their own foods. They must buy everything they need from the great new downtown supermarket, or the market stalls that have been located along the city walls for as long as anyone can remember. For many years, Pedro has gone into villages in the countryside to buy vegetables to sell in the city. He sells his fresh vegetables to the produce manager at the new supermarket, to the people who have market stalls and to the food processing factories on the outside of the city walls.

Pedro's truck came slowly to a stop at the loading dock of the new supermarket. The man from the supermarket was happy to see Miguel's fresh red tomatoes and the other vegetables in Pedro's big truck. Pedro unloaded several boxes of Miguel's tomatoes and other fresh

vegetables and fruits and stacked them in a cool

dark room filled with other boxes of tomatoes and vegetables. The heavy wooden door slammed shut and the room became dark and quiet. In the morning, workers from the supermarket would stack the tomatoes high in the shiny cool display cases under bright lights in the great supermarket. Busy city people would put the plump red tomatoes into plastic bags and carry them home for dinner.

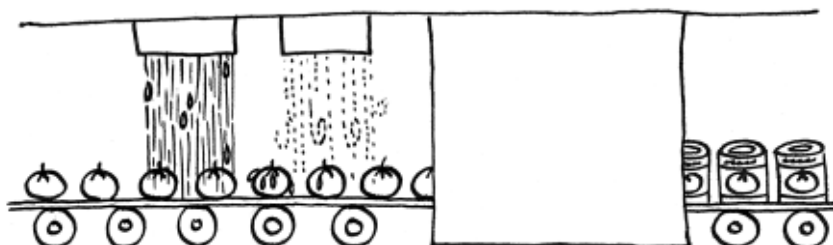


The Tomatoes go to the Food Processing Factory

The rest of Miguel's tomatoes continued their journey through the crowded city streets. All around Pedro's truck, horns were honking and traffic was rushing as a police officer directed Pedro on to the highway leading to the factory district outside the centre of the city. Pedro's truck rolled up to the loading dock of the food processing factory just as the sun was going down behind the city.

At the factory, strong men carried the boxes of tomatoes from Pedro's truck into the warehouse, talking and laughing as they worked. Long rows of boxes filled with tomatoes and other vegetables were crowded against each other, waiting to enter the factory to be turned into canned food. Boxes of tomatoes were emptied on to the conveyor belt that chugged its way through the factory to each of the processing steps. Miguel's tomatoes were now mixed up with tomatoes from all parts of the countryside. The conveyor belt slowly carried the shiny red tomatoes past the sorters. The sorters examined the tomatoes as they flowed by, looking like a flowing red river of tomatoes. Their hands, wearing plastic gloves, could be seen darting out quickly to remove any tomatoes that were damaged. The tomatoes slowly chugged to the next station, where they were squirted with hot water and tumbled to remove their skins. Next they were dropped into a large tub where they were cooked and spices and salt were added. Miguel's tomatoes were now bubbling in the large tub with all the other tomatoes, smooth and plump in the spicy red juice. They continued their journey to the canning area where they

were dropped with a splash and a plop into rows and rows of shiny round cans. With a noisy bang, the cans were sealed. A bright red label with the picture of a tomato was glued on to each can. Workers quickly snatched up the cans and put them into strong brown cardboard boxes.



The Tomatoes go Home

Miguel's tomatoes, deep inside the round cans, packed into cardboard boxes, were piled on to an electric cart that took them to the big warehouse to be stored until they were sold. Miguel's tomatoes could spend many months waiting in the warehouse until they were ordered. They could be ordered by someone in the city, or they could travel around the world to a distant place, perhaps even a place where tomatoes have never grown. They could travel in a truck, a train, an aeroplane or a boat. They may be purchased and used for dinner at a hospital, a school, a restaurant, or by a family.

It is even possible that one day Miguel and Ana will go to the grocery store in their small village and buy a can of cooked tomatoes when their own supply of sauce made by Ana is gone. They will sit down to dinner with the canned tomatoes in a sauce. And Miguel will say these tomatoes are delicious, Ana, but not as good as ours. And Ana will reply, yes, not as good as ours, but they are very, very good, indeed. And they will not know that their tomatoes have come back home.





Table: Food System Chart

Processes and Considerations:		
<i>Steps</i>	<i>Local Food System</i>	<i>Commercial Food Sector</i>
Getting ready to grow the food	Seeds Tools Land Other?	Seeds Fertilizer Pesticides Farm equipment Land Other?
Growing the food	Labour Weather conditions Safety Other?	Labour Weather conditions Safety Other?
Moving food from the field	Baskets Boxes Carts Trucks Other?	Trucks Roads Warehouses Other?
Processing, selling or storing the food	Jars Storage space Marketplace Economic stability Political stability Other?	Warehouses Factories Marketplace Economic stability Political stability Other?
Preparing and eating the food		Cooking place Knowledge of food and nutrition Sharing the food Other?



Country Case Study: Asia

A period of rapid economic growth has resulted in major gains in food security across most of Asia and the Pacific. Cambodia, where the proportion of undernourished dropped from 62 to 33 percent between 1980 and 1996, led the way. Many other countries in the region also showed strong reductions, including China, India, Indonesia, Myanmar, Nepal, Pakistan and Viet Nam. Undernourishment increased in only two countries – Mongolia and the Democratic People's Republic of Korea. In the latter, it rose from 16 to 48 percent. The financial crisis may have blunted progress in some countries, but the overall trend remains positive.

Cambodia – reaping the dividends of peace

More land is being farmed, more food is being produced and far fewer people are going hungry in Cambodia, as the country rebounds from decades of conflict. Between 1980 and 1996, farmers almost doubled the area on which they were growing crops. Yields of rice, Cambodia's main staple food, shot up by 64 percent. Pork, beef and poultry production expanded rapidly. Because of the gains in food production, Cambodians are eating substantially better, even though the population has continued to grow rapidly and food imports have declined.

Despite this recent progress, however, Cambodia remains a very poor country, and many of its people still suffer from food insecurity. Even after a 21 percent jump since 1980, Cambodians' average food intake in 1996 is scarcely enough to meet the minimum daily requirement. More than one-third of all households fall below the poverty line. The country's poverty is reflected in the lack of diversity in people's diets. Almost 80 percent of the average daily calorie intake comes from rice.

Decades of war and civil strife left traditional irrigation systems in ruins. Many fields had been abandoned to landmines. The peace settlement in 1979 opened the door for recovery; an economic reform programme introduced in 1992 brought inflation under control. Farmers responded by increasing the area cultivated, expanding rice production and diversifying into crops and animal products for export.

Programmes to remove landmines and rehabilitate irrigation systems are continuing. A programme has also been put in place to reduce poverty by creating jobs for vulnerable groups.

DPR Korea – a bitter harvest

The Democratic People's Republic of Korea has been hit hard during the 1990s by floods, drought and the collapse of its special trading relationships with China and the former Soviet Union. The impact has been devastating both to food production and to the nutritional status of the population. Total cereal production plummeted to less than half its 1980 level, while the proportion of undernourished people soared to almost half the population.

Rapid economic deterioration left the country without either the cash or the creditworthiness to finance needed food imports. Massive food aid was provided, but logistical problems made it difficult to reach all of the people in need. The crisis strained the national public distribution system to breaking point. The system sells fixed rations of rice and maize to city residents and to people who work on state-run farms and enterprises in the countryside. As crops failed and imports dwindled, reserve stocks held by the system proved far from sufficient to fill the gap. Rations were cut drastically and many people reduced consumption significantly.

The country's collapse came on the heels of a period of rapid economic growth. With limited arable land and a short growing season, gains in food production had been achieved through high-input agriculture. When the country was suddenly cut off from access to spare parts, fertilizers, pesticides and pumped water, yields started to fall sharply. Then, starting in 1995, two years of heavy storms and flooding, followed by a severe drought, devastated large tracts of agricultural land.

The country is now trying to revive agricultural production by introducing improved seed varieties and double-cropping methods, rehabilitating irrigation systems and improving soil fertility.



Country Case Study: Latin America and the Caribbean

Both the levels and the trends of undernourishment vary considerably in Latin America and the Caribbean. In most South American countries, levels are already low or rapidly declining. In Central America, on the other hand, levels are increasing in several countries, although Honduras registered the strongest gains in the region by bringing its prevalence of undernourishment down from 31 percent to 21 percent. In the Caribbean, Cuba's setback, with the share of undernourished rising from 3 to 19 percent, was in many ways typical of several of its island neighbours, which have experienced increases in undernourishment since 1980.

Honduras - economic growth helps to reduce hunger

Steady economic growth, coupled with an effective aid programme for its poorest citizens, has helped Honduras reduce by almost one-third the proportion of its population suffering from undernourishment. Increases in food production, imports and use of stocks all contributed to putting more food on Honduran tables. Maize production nearly doubled between 1980 and 1996. Much of the increase was consumed not by people but as feed for the booming cattle industry. Maize consumption by people actually declined slightly. Vegetable oils and sugar accounted for most of the increase in food intake, with consumption of meat and beans also increasing somewhat.

Since Honduras adopted a far-reaching structural adjustment programme in 1988, the country's economy has been growing at an annual rate of 2.7 percent. The increased prosperity has helped bring safe water to 87 percent of the population and raise the literacy rate to 70 percent. Direct aid to the poor is provided through the Honduran Social Investment Fund, which has reached many of the most deprived. A ration programme supplies coupons to help schoolchildren, mothers and elderly people buy food and other necessities.

Despite its recent gains, Honduras faces difficult challenges. Economic growth has not eliminated wide disparities in wealth and income. Poverty and food insecurity remain relatively widespread. About half of the Honduran population is rural. And in the countryside, nearly 40 percent lives in extreme poverty, with many people working as agricultural labourers on large estates. Commercial agriculture offers good possibilities for growth, but the challenge of achieving a more equitable distribution of the benefits remains.

Cuba - loss of trading partner erodes food security

Cuba has seen its economy shrink and levels of undernourishment rise since losing its most important trading partner with the break-up of the former Soviet Union. With much of its agriculture geared to producing commodities for export (primarily sugar and tobacco), Cuba had succeeded in reducing undernourishment to very low levels while relying on trade for more than half of its food.

With the end of Cuba's special trading relationship with the former Soviet Union, daily food intake dropped by more than 500 calories per person, mainly because of a steep decline in food imports. Yields for major food crops also dropped because of a lack of imported fertilizer, but Cuba managed to produce nearly comparable quantities by growing food on more land.

The economic decline has increased the number of people relying on subsidies while reducing productivity and food intake for many workers and their families. Continued restrictions on trade with the United States add to the country's economic difficulties.

Despite its recent problems, Cuba remains relatively prosperous and well fed compared with other countries in the Caribbean and Central America. More than half the country's roads are paved and 95 percent of the population have access to safe water.

Since 1993, the Cuban Government has given priority to increasing food production and restructuring industry. Signs have begun to emerge that the new economic model is taking hold and labour markets are recovering. But the transition process is far from complete.



Country Case Study: Near East and North Africa

Most countries in the Near East and North Africa have already achieved greatly reduced levels of undernourishment. Indeed, the region accounts for ten of the 14 developing countries where undernourishment affects less than 5 percent of the population. Morocco's decline, from 10 to 5 percent undernourished, represented the best progress among this group of good performers. Significant increases occurred only in Afghanistan, where the proportion of people who are undernourished shot up from 33 percent in 1980 to 62 percent in 1996, and in Iraq, where the share rose from 4 to 15 percent over the same period.

Morocco - thriving economy boosts food security

With substantial mineral wealth and an established position as a centre for trade and commerce, Morocco has enjoyed steady economic growth that has reduced undernourishment to very low levels. Between 1980 and 1996, daily food intake increased from 2 723 to 3 186 calories, reaching levels comparable with those of some industrialized countries. The gains came almost equally from increases in food production and in trade. Production of cereals and potatoes more than doubled, spurred by substantial increases in both crop yields and the area under cultivation. Much of the increased production was used for feed, while imports grew to meet rising demand for food. With the economy growing at almost 4 percent per year, Morocco has become increasingly urban. Improvements in transportation, sanitation and education have been particularly marked in the cities. However, almost half the population remains in rural areas, where poverty and vulnerability persist, particularly among traditional small-scale farmers and herders. Barely half the population has access to safe water and 56 percent remain illiterate. Environmental problems also loom. Water for agriculture and grazing lands is scarce, and 61 percent of the land is severely degraded. To eradicate remaining pockets of hunger, action will need to be taken to introduce more sustainable agricultural practices and to generate jobs and income in urban areas.

Afghanistan - war leaves little ground for crops

Food production and food security have both fallen victim to decades of warfare in Afghanistan. Production of cereals fell slightly while returning refugees helped swell the population by 25 percent between 1980 and 1996. As a result, average daily food intake fell from 2 186 to 1 710 calories, significantly below minimum requirements. Two-thirds of the country's provinces are now food-deficit areas; but the war-torn economy cannot generate imports to fill the gap. Afghanistan's problems are unusual in a region where levels of undernourishment are generally low. But they are typical of many war-torn countries facing complex humanitarian emergencies. More than 40 percent of the country's arable land is riddled with landmines and cannot be farmed. Thousands of people who used to make their living from farming have migrated to towns and cities, joining the ranks of a new, impoverished urban underclass. Only 15 percent of the population has access to safe water and some 70 percent are illiterate. Intermittent fighting and restrictions on movement continue to disrupt efforts to rebuild the country. One in every 50 Afghans has been a landmine casualty. Every day, mine blasts kill or maim another ten people, a third of whom are women and children. Many who have been disabled by war injuries or mines are no longer able to work. Their dependent status puts additional pressures on other family members who must feed and care for them. Large volumes of food aid remain far from sufficient to satisfy the minimum needs of such a large number of undernourished. Until peace is restored, there can be little hope of any lasting solutions.



Country Case Study: Africa

With Ghana leading the way, eight countries in West Africa reduced hunger significantly between 1980 and 1996. Indeed, the five countries worldwide that scored the greatest gains were all from this subregion. The picture was very different in Central, East and Southern Africa, however. There, the proportions and numbers of undernourished people generally increased. Burundi suffered the largest increase, with the proportion of undernourished people rising from 38 percent to 63 percent between 1980 and 1996. But 13 other countries in Central, East and Southern Africa also showed large increases.

Ghana – economic growth fuels rapid gains

Buoyed by a strong economy and dramatic increases in the yields of staple food crops, Ghana reduced undernourishment more rapidly than any other country in the world between 1980 and 1996. Average food intake soared from 1 790 calories per day to more than 2 600 calories. The gains came entirely from increased food production, with imports remaining virtually unchanged. The introduction of improved varieties of cassava helped boost yields of this main staple by almost 40 percent. Yields of yams, maize and rice also improved dramatically, and the vigorous economy encouraged farmers to increase the area under crops by more than 25 percent.

Overall, the economy grew at an annual rate of 2.3 percent. The increased prosperity brought marked improvements in sanitation, health and education. The proportion of the population with access to safe water increased from 35 to 65 percent. Illiteracy was reduced substantially, from 57 to 36 percent.

Ghana's period of rapid growth was sparked by reforms to invigorate the economy after a long period of decline. A special Programme to Mitigate the Social Costs of Adjustment and other social programmes helped protect vulnerable groups from possible negative effects of the reforms.

Despite Ghana's remarkable progress, almost one-third of the population remains poor, and 10 percent lives in pockets of extreme poverty in rural areas. These high levels of poverty mean that food insecurity and vulnerability persist. Continued economic growth and increased opportunities for off-farm employment will be crucial to maintain the rate of progress.

Burundi – population growth and conflict

Undernourishment has increased sharply and food production has fallen as Burundi struggles to cope with rapid population growth, severe land degradation and simmering civil conflict. Average daily food intake tumbled between 1980 and 1996 from 2 020 to 1 669 calories, far below minimum requirements. Production of cassava, sweet potatoes and beans, the mainstays of the Burundian diet, also declined.

With an annual growth rate of 2.7 percent, Burundi's population has been expanding far faster than its economy, resulting in a negative growth rate per person. Burundi's weak economy and geographic isolation have left the country overwhelmingly rural (with more than 90 percent of the people living in the countryside) and almost completely dependent on domestic food production.

The rapid pace of population growth has strained the country's limited land resources to the breaking point. More than 80 percent of Burundi's fragile, mountainous land is severely degraded. Both the area being cultivated and crop yields have been falling.

Burundi's production problems have been compounded by poorly developed transport and marketing facilities. In addition, civil conflict has disrupted production and further restricted trade opportunities.

Burundi's physical isolation constitutes a major barrier to trade and has obstructed growth of non-agricultural sectors. But the spiral of population growth, environmental degradation and falling agricultural productivity dictates that solutions to Burundi's food security problems must be found outside agriculture.