

## 3.1 Food security

**Food security** is a state where all people at all times have access to enough safe, nutritious food to sustain a healthy life. For a person, community or country to have a secure food supply they must have three things:

- food availability
- food accessibility
- knowledge and resources to use food appropriately.

People who do not have food security suffer from hunger and illnesses related to lack of food, such as malnutrition. About 870 million people around the world do not have food security – the majority of them live in developing countries.

### Food availability

**Food availability** means people have enough food of appropriate quality available on a consistent basis. This may include production, storage, distribution and exchange of foodstuffs, provided reliably and regularly. People whose food availability relies solely on the production of a single crop, for example, may find themselves at great risk of **food insecurity** if that crop fails.

Many countries have strategies in place, such as growing a variety of crops, to maximise their food availability and ensure food security. Management of fishing and fishing industries is also used by some communities to ensure a constant supply of fish is available to sustain them. Food availability alone, however, does not guarantee food security.

### Food accessibility

**Food accessibility** means physical and economic access to food. That is, there needs to be enough food available and it must be in reach of those who need it. Many food researchers believe that the world's farmers produce more than enough food to meet the needs of every person on Earth. However, the food is not distributed evenly. **Developed countries** have more food than they need and high levels of wastage, while many people in **developing countries** struggle to access enough food to meet their daily needs. The reasons for this uneven distribution are many and complex. They include social, political and economic factors, such as rising prices, trade agreements and quotas set up between countries.



**Source 1** In many coastal communities in Arnhem Land, the ocean provides food security. Local knowledge ensures the catch will be prepared in a safe and appropriate way.



**Source 2** Australia is a country that has a high level of food accessibility – many people enjoy good access to a wide variety of food.

### 3A What is food security?

## Knowledge and resources to use food appropriately

Appropriate use of food means using food safely and applying knowledge about nutrition, clean water and sanitation when preparing food.

What is appropriate use of food varies between different places and cultures. What is appropriate and usual to eat in one part of the world might be viewed as unusual somewhere else. In many Asian countries,

for example, insects and other invertebrates such as scorpions and spiders are regularly eaten as part of a balanced diet (see Source 3). Local cultural knowledge means these insects are prepared properly, making them safe to eat and nutritious. This is an example of appropriate use of food. Knowing how to use such foods appropriately could potentially stave off the incidence of food insecurity. In fact, the United Nations has identified insects as the 'forgotten food crop' as they could help alleviate food insecurity, particularly in developing countries.



**Source 3** Deep-fried scorpions ready for sale at a Beijing street market

## Check your learning 3.1

### Remember and understand

- 1 What are the three factors that contribute to food security?
- 2 Describe and explain food security in Australia with reference to these three factors.

### Apply and analyse

- 3 Where does most of your food come from? How would your answer differ if you lived in another country, for example, Vietnam? Explain the reasons for your answer.
- 4 Quentin, the boy in Source 1, shows that he has food availability and food accessibility. To have food security he now has to use the food appropriately and prepare it ready for eating. Do you know how to prepare his food? Do you think that he does? What does this tell you about food security?

### Evaluate and create

- 5 Find images of foods from around the world and display them on your classroom wall. Use your examples to explain why food preferences and food security differ between places and cultures.
- 6 It is estimated that about 870 million people suffer from hunger due to poor food security. Of the three factors that contribute to food security, which do you believe is most important? Discuss your thoughts with a partner and then share your thoughts with the class.



## 3.2 Levels of food security in different places

People living in different parts of the world experience different levels of food security. People in developed countries including North America, Western Europe and Australia, for example, generally have very high levels of food security. Food is available, accessible and appropriate to a high proportion of the population in these places. At the other end of the scale, many people in developing countries, particularly throughout Asia and Sub-Saharan Africa, do not have food security. Food security can be impacted by a number of factors such as unequal access to good farming land, education, technology and natural resources. Fast population growth, conflict and natural disasters can also contribute to a person's inability to access food, by decreasing the amount of available food per person.

### Forces impacting on food security

Poverty and food insecurity are closely linked. Individuals who suffer from poverty struggle to meet their basic daily food needs and spend a greater percentage of their income on food than those in wealthier countries. This makes them highly vulnerable to forces that change the availability and accessibility of food. If the price of food suddenly increases, for example, food that they could previously afford becomes unaffordable.



**Source 1** The people of Zimbabwe in southern Africa have one of the lowest levels of food security. This girl is scavenging for food in a rubbish dump near the capital, Harare.



**Source 2** One of the most food-secure nations in the world is the United States, where the majority of people have access to a reliable, safe and nutritious food supply.

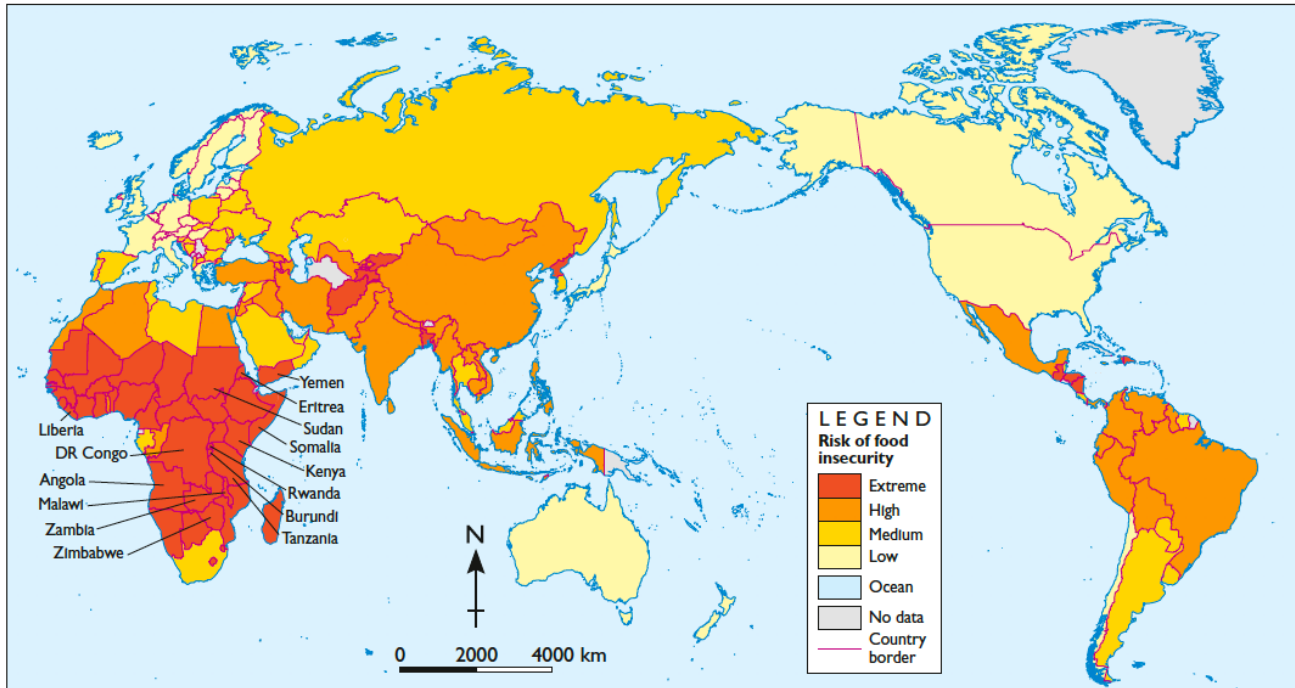
Other forces that can impact severely on those who do not have food security include natural disasters, such as drought or flood. Many people in poor areas rely on local agriculture for food, so food sources can be left damaged or destroyed following natural disasters. Human activities can also affect food security in many places. Armed conflicts may interrupt usual markets and food supply lines, or land used for growing crops may be repurposed for other uses, which results in local food supplies being affected. Those without food security are much more vulnerable to change that is caused by outside forces.

### Global patterns of food security

Source 3 shows the global pattern of food security and insecurity. Scores for each country were calculated using 18 different indicators, including the nutrition and health status of the population, the availability of food staples such as rice, wheat and corn, and access to these foods. Countries were then grouped into four categories according to their risk of experiencing widespread food insecurity.

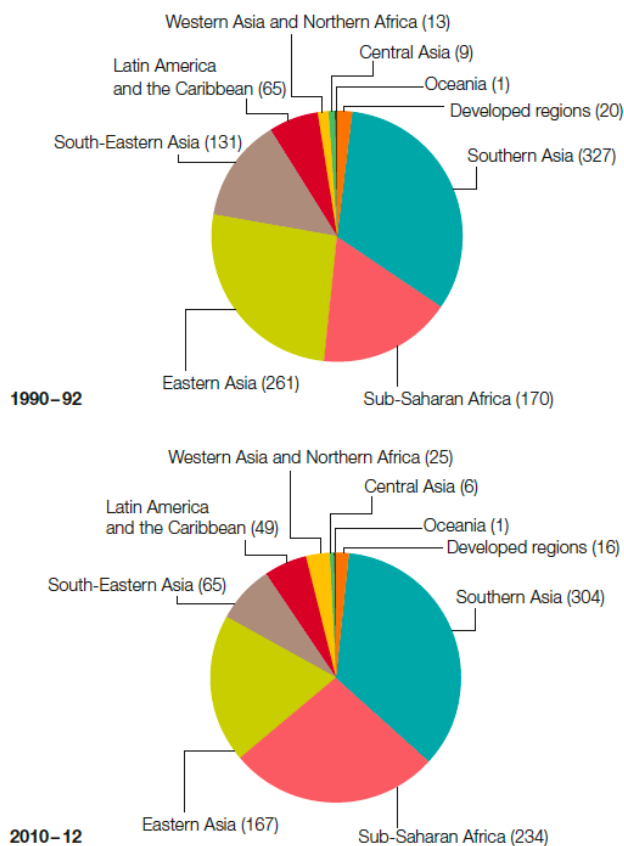
The global distribution of food security is not static. The number of **undernourished** people in the world, for example, has fallen by more than 130 million in the last 20 years, despite the world's population growing by more than 1.5 billion in the same period. The distribution of undernourished people in the world has also changed (see Source 4).

WORLD: FOOD INSECURITY LEVELS



Source 3

Source: Oxford University Press



**Source 4** The distribution of hunger in the world is changing. These charts show the number of undernourished by region, 1990-92 and 2010-12, in millions.

## Check your learning 3.2

### Remember and understand

- 1 How are poverty and food insecurity linked?
- 2 Compare the food security of the two individuals shown in Sources 1 and 2. Comment on the food availability, accessibility and appropriateness for each of these people.

### Apply and analyse

- 3 Examine Source 4 which shows the 1990-92 distribution of undernourished people in various parts of the world compared with the 2010-12 distribution.
  - a What has happened to the overall number of undernourished people over the past 20 years?
  - b Which regions have seen an overall increase of undernourished people?
  - c Is this change reflected in Source 3?
- 4 Describe the distribution of global food insecurity using the PQE method (for more information on the PQE method, refer to page 19 of 'The geography toolkit').
- 5 Discuss the factors that may be responsible for the pattern you have described.
- 6 Australia is described as having a low risk of experiencing food insecurity. Why do you think this is the case?

### 3A rich task

## Food insecurity in the Horn of Africa

The Horn of Africa refers to the countries in the north-east of the African continent. Ethiopia, Eritrea, Somalia and Djibouti are the four countries that officially make up the Horn, but Kenya, South Sudan, Sudan, Uganda and even Tanzania are sometimes considered to be part of the Horn of Africa. It covers an area of approximately 2 million square kilometres and is home to around 100 million people.

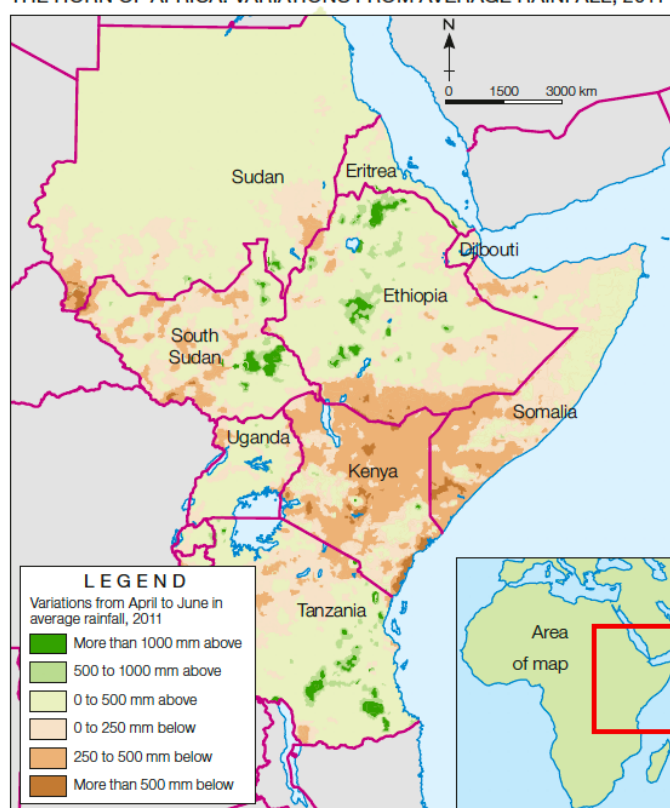
People who live in countries on and around the Horn of Africa often experience food insecurity. This is mainly due to a combination of natural processes and human activities. In 2011–12, the area experienced the worst drought in decades. It caused the widespread devastation of millions of hectares of vital food crops and led to the deaths of hundreds of thousands of people by starvation and malnutrition. The United Nations declared the area to be in the grip of a famine, the first announcement of its type in nearly 30 years.

At its most severe, the drought and subsequent **famine** brought food insecurity to more than 13 million people in the Horn of Africa as well as in neighbouring countries, including Kenya, Uganda and South Sudan. The situation was worsened by an ongoing conflict in southern Somalia that made it difficult for aid agencies to deliver food to the communities in need. As many as one million people fled the affected areas causing a further humanitarian crisis as **refugee** camps struggled to accommodate the flood of new arrivals.

#### Local people in need of assistance as at 5 September 2011

Ethiopia	4.6 million
Djibouti	146 600
Somalia	4 million
Kenya	3.8 million

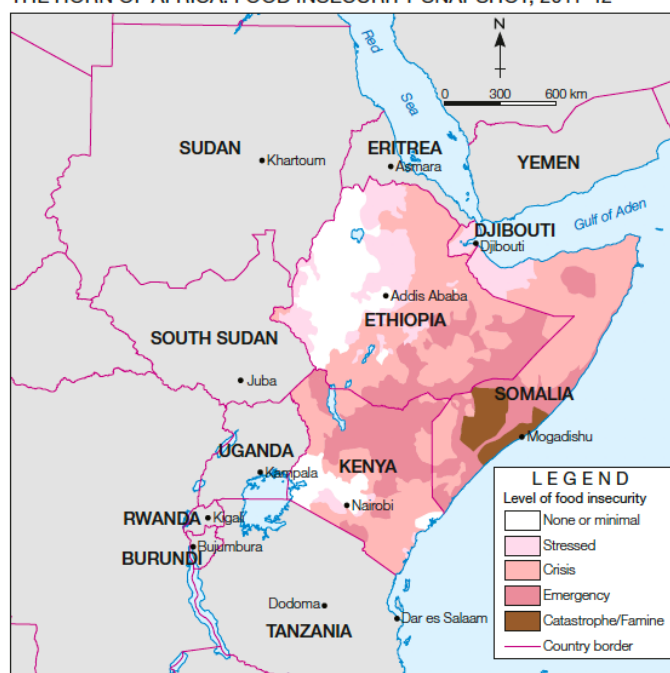
THE HORN OF AFRICA: VARIATIONS FROM AVERAGE RAINFALL, 2011



Source 1

Source: Oxford University Press

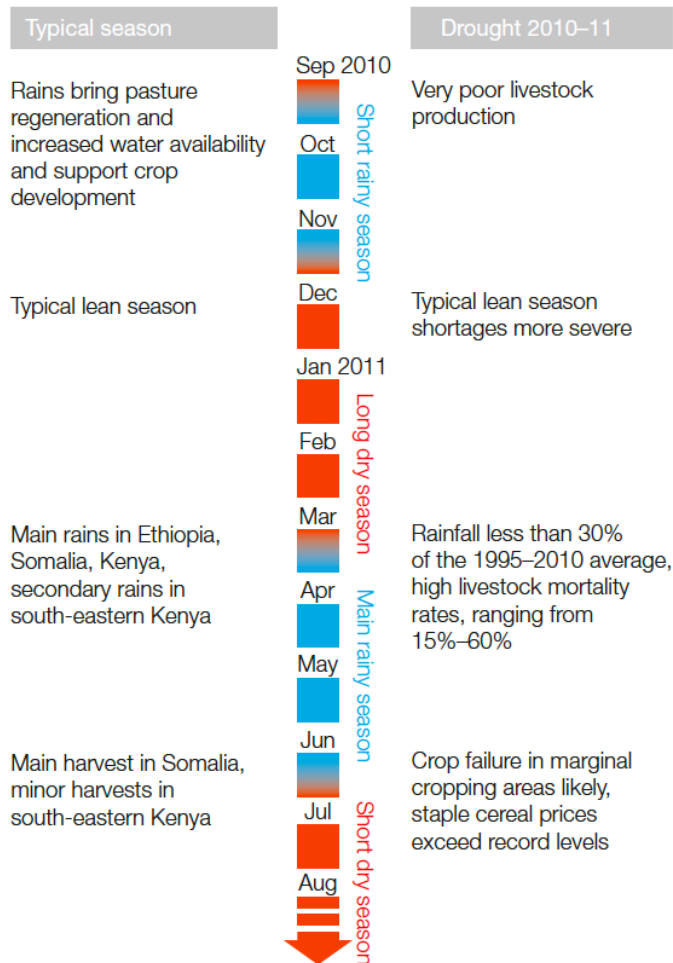
THE HORN OF AFRICA: FOOD INSECURITY SNAPSHOT, 2011–12



Source 2

Source: Oxford University Press





**Source 3** This timeline shows the rainy season failure of 2010–11, compared to a typical season.

## skilldrill

### Developing geographical questions

It is important that geographers ask lots of questions. These questions can be simple or complex, and can guide understanding of places, events, and the causes and effects that various factors have on an environment.

For example, in the case of an event such as a famine, a geographer may start the process of understanding the situation by asking a simple question such as, 'How many people died in the famine?' Often a simple question will look at the more quantitative aspects of a situation (i.e. facts that can be expressed in numbers).

Then, to investigate further and deepen their understanding, a geographer may ask a more complex question, such as, 'Was there a change in climate that caused food crops to fail?' Often, a complex question will look at the more qualitative

aspects of a situation (i.e. things that can be expressed in words not numbers). The best complex questions can open up a whole new area to explore and result in an in-depth understanding of the situation.

The following steps will help you generate a range of simple and complex questions.

**Step 1** Select an event that you would like to investigate.

**Step 2** Construct some simple questions to guide your initial investigation. The key words 'who', 'where', 'when' and 'what' should help you get started.

**Step 3** Investigate the questions you have listed and note down your answers.

**Step 4** Expand your investigation by forming some more complex questions. Words such as 'why', 'what caused', 'who interacts' and 'what impact' will help you to construct these types of questions.

**Step 5** You may also develop some of the questions from Step 2 into more complex ones. For example, you could develop 'What?' into 'What will the effect of ... have in the future?' to allow for further discussion.

### Apply the skill

Use Sources 1, 2 and 3 together with the information provided to complete the following tasks.

- 1 Develop a set of five simple questions about the famine in the Horn of Africa in 2011–12. Use your answers to list some main facts about the situation.
- 2 Now investigate the famine more deeply by constructing three complex questions that focus on its causes. You may want to develop a complex question that focuses on the political situation in the region and the effects this had on the countries that suffered.
- 3 Prepare a brief report explaining the famine based on your answers. Check that you have included causes as well as effects in your report to give a well-rounded viewpoint.

## Extend your understanding

Conduct some further research and then complete the following tasks.

- 1 How did the ongoing conflict in southern Somalia contribute to the famine?
- 2 Research how organisations such as Caritas, UNICEF, AusAID, Mercy Corps, World Vision and Oxfam helped bring food security to this region during 2011 and 2012.
- 3 What means do you think can be adopted to establish long-term food security in a region that experiences famines?

## 3.3 Challenges to food production

As we have learnt, food security (the consistent access and availability of an adequately nutritious food supply) depends on a number of factors. In some places, these factors are in a state of flux, and food security is under constant threat.

There are six main threats to food security which are outlined here, and which will be explored in more

depth in this section of the chapter. The main factors that come into play and put food security at risk are: water scarcity; climate change; threats from non-native plants, animals and insects; competition for land; the use of land for fuel instead of food; and armed conflict.

### Challenges to food production

#### Water scarcity



**Water scarcity** is the lack of access to enough safe water. The supply of clean, safe water is important not only for people to drink, but for the safe growing of crops for food. As the world's population continues to grow, water becomes an even more important resource, and its management becomes more crucial. Water is needed for people to drink, wash and cook with on a household level; however, massive amounts of water are also needed for agriculture, industry, manufacturing and leisure activities. This competition for water can lead to shortages, and when there is not adequate water, food security is put at risk.

**Source 1** Drought is a major cause of food insecurity. Prolonged periods of inadequate rainfall can cause soil erosion.

#### Climate change



The term **climate change** refers to long-term changes in weather events and patterns worldwide. The effects of climate change include rising global temperatures and changes in levels of rainfall. Such changes impact on the environment and the sustainability of agricultural production. Places that are able to grow certain crops because of the reliable rainfall, for example, may find that increases or decreases in rainfall affect the viability of that crop. Climate change may also cause more frequent droughts or floods in some regions, both disastrous to crops. The effect on crop growing is just one example of the way climate change can directly impact on food security.

**Source 2** The melting of glaciers and icebergs is a well-known example of climate change. Another effect to climate change is the threat to food security in many parts of the world.

#### Threats from non-native plants



The introduction of non-native plants, animals or insects into an area can have devastating effects on the natural environment. This, in turn, can develop into a situation where food security is put at risk. Pests such as the Khapra beetle, which live and breed in stores of grain, can destroy up to 70 per cent of a store and make it inedible. A native of South Asia, the Khapra beetle is now one of the top invasive species globally. In countries where rice is a food staple, the damage caused by this beetle puts food security at risk.

**Source 3** Swarms of locusts, which will eat any plant material in their path, are a pest that can quickly destroy crops, resulting in food insecurity.



### 3B What are the main threats to food security?

#### Challenges to food production

##### Competition for land



In many places around the world, agriculture is being threatened by competition for land. Food security may come under threat by people or corporations who want to use land for purposes other than growing food crops. Land that was once productive farmland is being converted into housing, mines, golf courses, shopping complexes and factories (see Source 3). This competition for land, partly to service and house growing populations, means that there is less land available to grow food.

**Source 4** Increasing competition for land to use for purposes other than growing food poses a threat to food security in some regions of the world.

##### The use of land for fuel instead of food



One of the biggest emerging threats to food security in recent years has come from the growth in the amount of land being used to produce crops used to feed cars, not people. These crops are used in biofuels – fuels that are produced, or partly produced, by some types of plants. Researchers, trying to reduce carbon emission caused by traditional fuels, developed biofuels. This has meant that land previously used to grow food crops has been taken over in order to supply the produce for biofuel (see Source 4).

**Source 5** The practice of using land to grow crops for fuel, not food, puts food security at risk for many people.

##### Armed conflict



**Armed conflict** is another complex and severe threat to food security. Armed conflicts have the potential to affect the food security of entire regions and may even result in famine. In cases of armed conflict, the food security of a population can be affected in various ways. Food may be stolen from the local people by armed forces, land used for growing food crops may be destroyed, or the young men – even children – who would normally tend fields may instead go off to fight. The effect of armed conflict on food security, and how to deal with it, is a major global concern to organisations such as the United Nations and UNICEF.

**Source 6** Food security can be jeopardised in areas of the world experiencing armed conflict.

#### Check your learning 3.3

##### Remember and understand

- 1 Why is there growing competition for water and land resources?
- 2 Name some of the competing uses for land around the world.

##### Apply and analyse

- 3 The use of biofuels can help reduce the carbon emissions that cause climate change, but growing crops for fuel can also increase food insecurity.
  - a In this instance, do you think it is more important to provide enough food for people or to help stop climate change?
  - b How would you suggest balancing the potential risks of climate change against people's need for food?