

SUSTAINABLE BIOMES: Food for life



Student Workbook

STARTER ACTIVITY

We all love food! Write some thoughts about the role of food in your life. Think about these questions when writing your response:

- What are your favourite foods?
- Where does your food come from?
- How do you feel when you're hungry?
What do you do about it?
- How important is food to your health and wellbeing?

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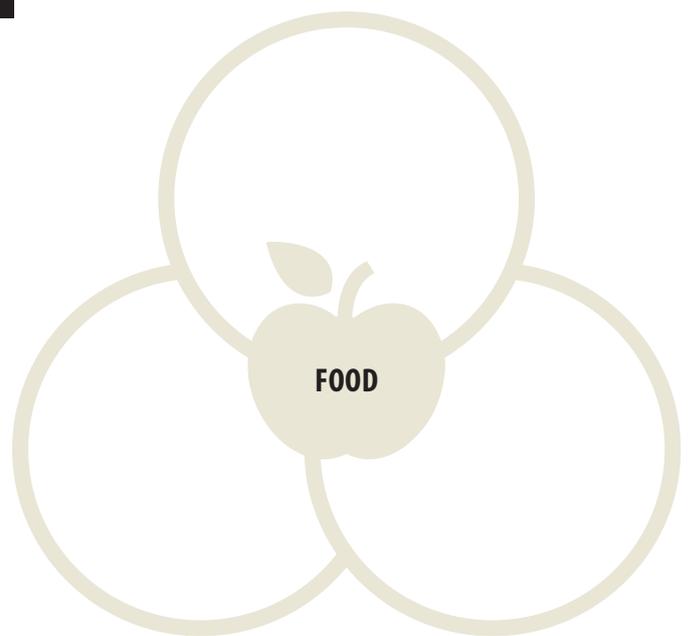
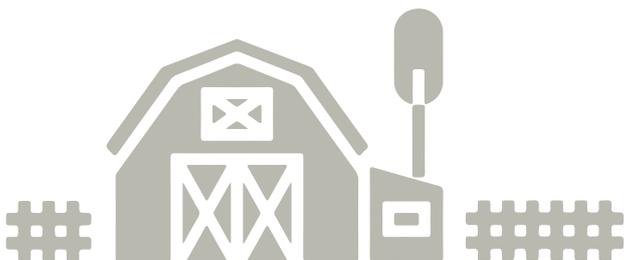
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ACTIVITY 1: FOOD ESSENTIALS

For most Australians, when we think of where our food comes from we picture the big supermarkets. However, the basis of most of the world's food is produced on farms. Many people rely on the crops they grow or the animals they raise themselves to survive.

- **Complete the diagram.**
What 3 natural elements are essential to grow food crops?



ACTIVITY 2: VOCABULARY



➤ **Match the term to the meaning** to build your vocabulary list for this topic



Terms:

Malnourished, Agriculture, Climate, Soil fertility, Undernourished, Irrigation, Sustainability, Climate change, Food security, Water scarcity

MEANING	TERM
A broad term used to describe a condition in which all people in a nation or region at all times have access to enough safe nutritious food to sustain a healthy life.	
When someone gets less than the minimum amount of nutrients needed for health and growth (a type of malnutrition).	
When one doesn't get the right amount of nutrients to maintain healthy tissues and organ function. It is often the result of not getting enough to eat, but also could be from not eating the right foods.	
The ongoing capacity of earth to maintain all life.	
The weather conditions prevailing in an area in general or over a long period.	
A change in global or regional climate patterns, attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.	
The ability of soil to sustain agricultural plant growth, i.e. to provide plant habitat and result in sustained and consistent yields of high quality.	
The science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.	
The application of controlled amounts of water to plants and crops to help them grow.	
Term used to describe a lack of sufficient water to meet the demands of an area or population.	

FURTHER READING

[🔗 World Health Organization: Double Burden of Malnutrition – Infographic](#)

ACTIVITY 3: KEY FACTS

➤ Circle the option you think is the right answer:

a) The number of people in the world facing severe food shortages is 1 in 1000 / 1 in 10¹

b) The number of hungry people in the world is rising / falling

c) The continent with the most undernourished people is Africa / Asia / North America

d) The continent with the most overweight people is Africa / Asia / North America

e) In Africa, 21% / 12% of the population is undernourished

f) In Australia, 13% / 3% of the population is undernourished²

g) Roughly 3% / 30% of the world's food produced is thrown out³

h) The demand for food is expected to increase by 14% / 74% per decade

i) The most important food in the world (because it is the major source of calories for half of the world's population, as well as key source of employment) is potatoes / wheat / rice / maize



¹(a)–(e): **The Food and Agriculture Organization:** State of Food Security and Nutrition in the World

²(f): **The World Bank:** Prevalence of Undernourishment

³(g)–(i): **The Food and Agriculture Organization:** Key Findings

ACTIVITY 4: CHALLENGES TO FOOD PRODUCTION

There are a number of challenges that makes growing and producing food increasingly difficult. If food is harder to grow, there is less of it to eat. This is especially the case for nations that are reliant on farming for their livelihoods.

➤ In groups, discuss what you think the following challenge means and how it could threaten a farmer's ability to produce food.

CHALLENGE	WHAT IS IT?	WHY IS IT A THREAT TO FOOD PRODUCTION?
<p>CLIMATE CHANGE People can be seen moving to higher ground due to floods in South Sudan.</p>  <p>© MSF</p>		
<p>WATER SCARCITY Around Kurtunle village the berkits, seasonal rain water harvesting ponds, are dried up or almost empty. One consists of some puddles of muddy dirty water only. These are often the only water supply for a village and its surrounding pastoralist bush communities.</p>  <p>© Susanne Doettling/MSF</p>		

CHALLENGE

LAND DEGRADATION

In Mauritania, MSF treats children suffering from malnutrition in Brakna district, close to the border with Sénégal.



© Bellio Nicoletta /MSF

WHAT IS IT?

WHY IS IT A THREAT TO FOOD PRODUCTION?

COMPETITION FOR LAND USE

Camels are led to fresh pastures in Doolo Zone a vast and remote area home to around 300,000 mostly pastoralist and many nomadic communities.



© Susanne Doettling/MSF

ARMED CONFLICT

A displaced person, due to violent conflict in DRC, with the kit of basic necessities that she has just received at the Kambe site.



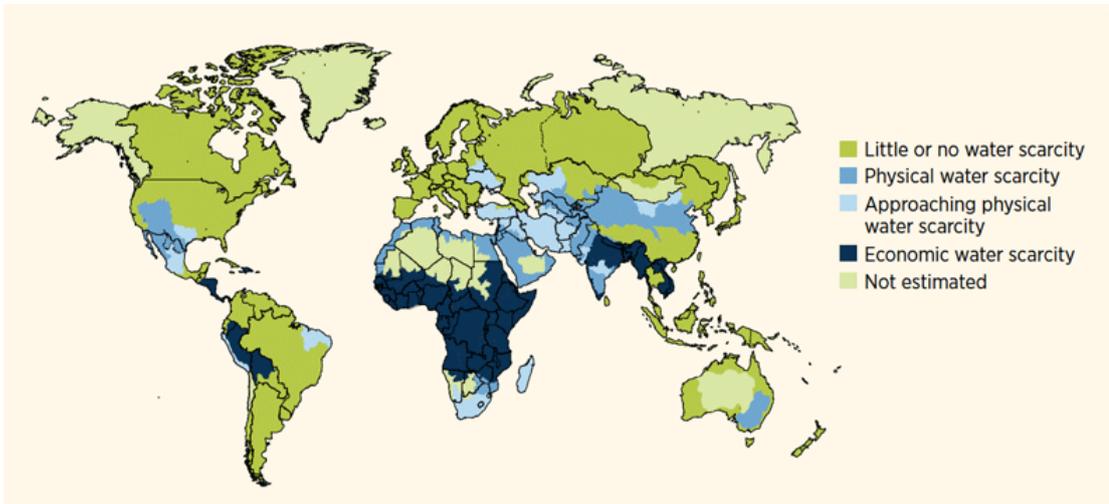
© MSF/Solen Mourlon

CHALLENGE FOCUS: CLIMATE CHANGE AND WATER SCARCITY

➤ Examine the graphs and then answer the questions below.

FIGURE 1 – GLOBAL PHYSICAL AND ECONOMIC WATER SCARCITY

Source: United Nations⁴

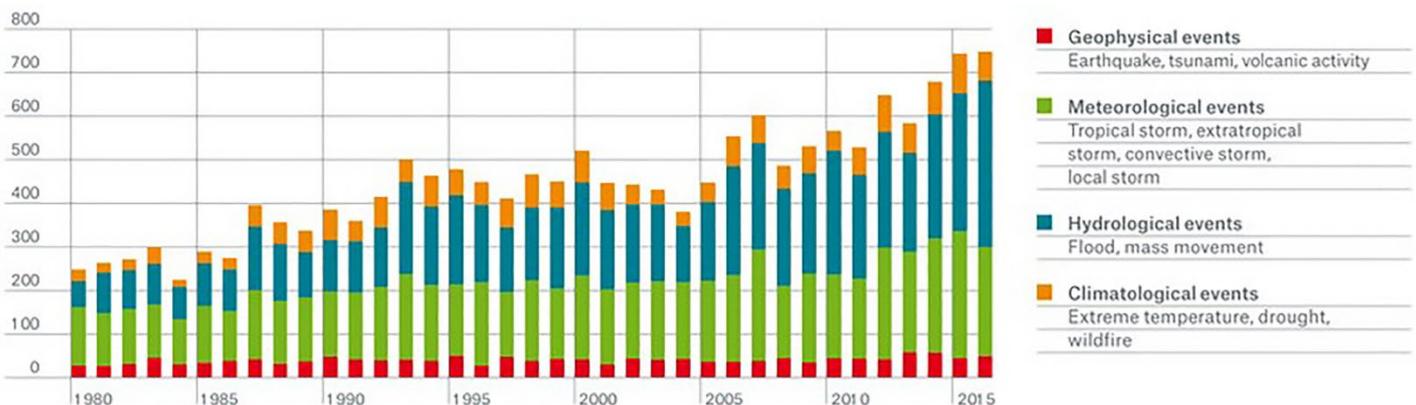


a) Which two continents are experiencing the highest rate of water scarcity?

b) How does having less access to water affect food supply?

FIGURE 2 – NUMBER OF NATURAL DISASTERS 1980-2016

Source: The Economist⁵



a) Referring to the data, what does Figure 2 tell us about the trend of natural disasters?

b) How do natural disasters affect food supply?

⁴ UN: Water Scarcity ⁵ The Economist: Weather Related Disasters are Increasing

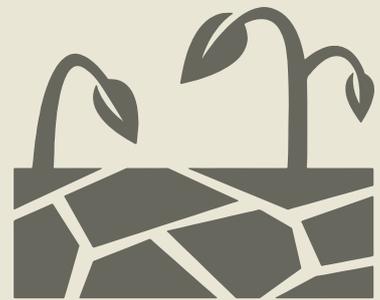
ACTIVITY 5: WATER SCARCITY

- Read the passage below and choose the correct word from the options to the right.
Consider grammar, spelling and relevance.

Water scarcity is connected with food insecurity, and both of these are exacerbated by climate related disasters. The number of extreme climate-related disasters, including extreme heat, floods,(1) and storms, has(2) since the early 1990s. Climate change means more frequent and intense extreme weather events(3) increase food insecurity and malnutrition by destroying land, livestock, crops and food supplies. More than 80% of the world's food(4) people live in countries prone to natural hazards and water scarcity. Current models(5) that climate change will severely intensify water scarcity throughout the world. Prolonged droughts will decrease access to water,(6) crop yields, and increase food insecurity and malnutrition. Food insecurity and water scarcity can also lead to widespread migration, as people are(7) to leave their homes, and violent conflict as competition for land, food and water intensifies.

WORD OPTIONS:

- 1) droughts / draughts / drowts
- 2) twice / doubled / multiplying
- 3) then / will / which
- 4) insecure / secure / wealthy
- 5) deny / predict / prove
- 6) decrease / increase
- 7) forcing / force / forced



ACTIVITY 6: CASE STUDY - ETHIOPIA

FOOD CROP PRODUCTION IN ETHIOPIA IS HIGHLY DEPENDENT ON THE RAINY SEASON, DURING WHICH ABOUT 70% OF TOTAL ANNUAL RAIN FALLS.

Three dry seasons in a row led to a humanitarian crisis in Ethiopia in 2015-2017. Food crops failed to grow, cattle died, millions of people across the country faced food and water shortages which led to widespread deaths from starvation and disease outbreaks⁶. Whilst droughts aren't new to this region, they are increasing. Medecins Sans Frontieres (MSF) continues to work in the area helping those most at risk from food and water shortages.

➤ **Read the below personal accounts from MSF workers and patients in the field during the drought.**

Use these accounts and above information to write a paragraph explaining why climate change and water scarcity are not just environmental challenges, but human ones.

📄 ¹ [World Food Programme: Horn of Africa](#)

Field Worker Kay Hodgetts with patient Mohamed and his father. ©MSF⁷



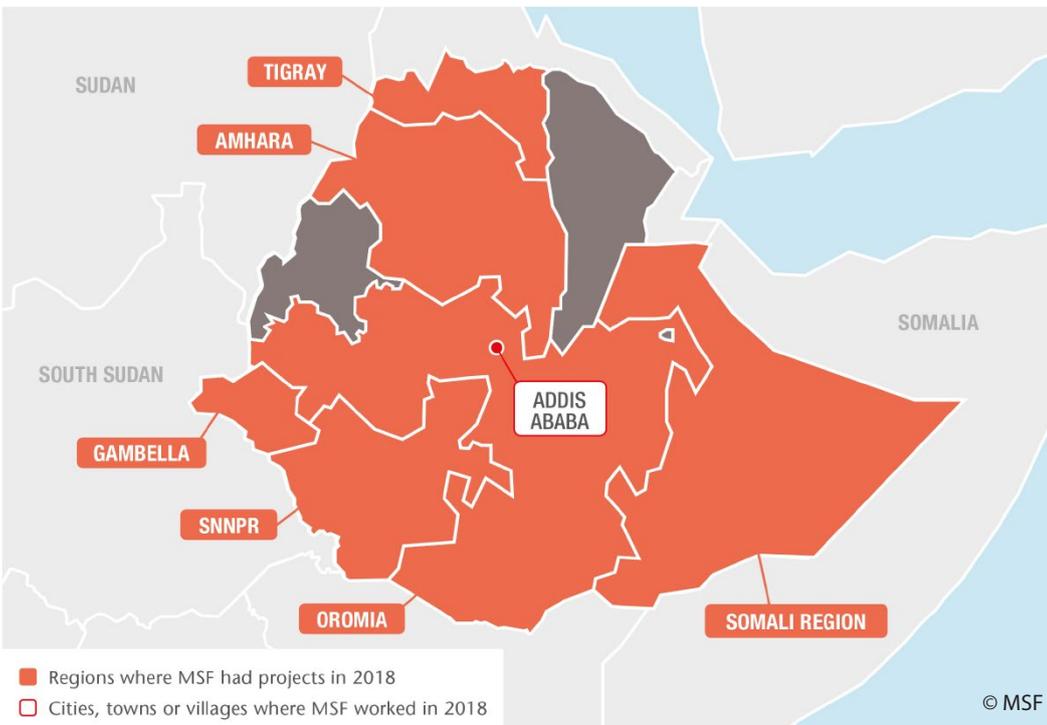


A child in Afar, Ethiopia, is vaccinated as part of a campaign to reduce disease outbreak. ©MSF⁸

A child suffering from malnutrition eats Plumpynut at MSF's Pibor clinic in South Sudan. ©Sarah Murphy/MSF



MSF PROJECTS IN ETHIOPIA



[Medecins Sans Frontieres: International activity report 2018 Ethiopia](#)
 © MSF

⁷ [Medecins Sans Frontieres Australia: Stories From Patients & Staff](#) ⁸ [Medecins Sans Frontieres: Ethiopia - Two years of drought](#)

“WHEN THE DROUGHT CAME, OUR ANIMALS DIED SO WE COULD NO LONGER STAY IN THE BUSH.

I have never seen a situation like this. We had animals that gave us everything we needed. Now we have nothing, we cannot even give our children milk and our children become sick and die.”

- **Ethiopian grandmother Fardausa, who brought her three-year-old granddaughter, Maida, for treatment to one of the therapeutic feeding centres supported by MSF.**

“WE SAW A FIELD WITH MANY, MANY GRAVES.

One of the more recent contained a mother, a father and five children. Apparently they had all passed away from malnutrition or associated problems. In some places we visited, we could smell death. Animals had been dying at an alarming rate and local people were struggling to bury the decomposing remains. Diseases associated with hunger and squalid conditions like measles, watery diarrhoea and pneumonia started to spread.”

- **Mohammed Delal part of a Médecins Sans Frontières assessment team.**

“ONE DAY, WE NOTICE A WITHDRAWN CHILD CLINGING TO HIS FATHER’S LEG.

The many sores around his mouth are cracked and oozing and his cry when I examine him causes them to split open and bleed some more. His father’s decision to leave the rest of the family at home and walk three hours with Mohammed to our mobile clinic in the bush was the right one. Mohammed, aged 4, is malnourished. As a result, his vulnerable body was riddled with infections; from the virus causing his high fevers, to the tinea creeping across his scalp, he needed urgent care. Prolonged drought means Mohammed’s father was struggling to grow food to feed his family. Relying on food rations of maize to feed a household of 12 means that it is hard enough for his father to stave off the family’s hunger, let alone provide a balanced diet.”

- **New Zealand doctor Kay Hodgetts, working as an MSF field worker in Ethiopia.**

“THROUGH TARGETED FOOD DISTRIBUTION AND A MEDICALISED NUTRITION PROGRAMMES, SOME POSITIVE RESULTS ENSUED.

Support was getting through to those families most in need and the most acutely malnourished children. Things started to change as the rains finally started to arrive. We can only hope that this is enough for the pastoralists to survive the lean period when nothing grows.”

- **Ekin Gayretli, Médecins Sans Frontières project manager in Sitti region, Ethiopia.**

➤ **Using the above information write a paragraph explaining why climate change and water scarcity are not just environmental challenges, but human ones.**

Use a PEEL paragraph structure to write your response.

<p>POINT Make an opening statement outlining your point.</p>	
<p>EXPLAIN Explain your point further using more information, detail and facts.</p>	
<p>EXAMPLE Provide examples to illustrate your point.</p>	
<p>LINK Make a closing statement that links your paragraph back to the question.</p>	

ACTIVITY 7: WHAT IS MSF DOING?

Médecins Sans Frontières (MSF) is an international, independent, medical humanitarian organisation working to alleviate suffering and to provide medical assistance to people affected by conflict, epidemics, disasters, or exclusion from healthcare in over 70 countries.

MSF teams see millions of patients every year in many different types of humanitarian aid projects, from disaster response to long-term medical programs.

Some of the ways MSF responds to the challenges of food production:

- Providing emergency medical care and food during epidemics or after natural disasters
- Giving people access to healthcare and nutritional information to tackle diseases and medical conditions, which need long-term treatment
- Prevent the spread of diseases through vaccination campaigns
- Providing healthcare infrastructure such as hospitals, ambulances, communications equipment
- Improving access to clean water and sanitation systems
- Working with scientists, governments and other organisations to research and share testimonies and data about the impacts of climate-related disasters. Our aim is to help improve the health situation of people based on need and to respond to gaps.

FURTHER READING

[🔗 Medecins Sans Frontieres: Treating Malnutrition and Malaria in southern Niger](#)

➤ Investigate how the Australian Government responds to food insecurity and food production challenges in a region (eg. Sub-Sahara Africa).

Create a report detailing your findings. In your research, make an assessment as to how effective you think the Australian Government is at addressing food production issues abroad.

Contrast and compare this work to the work of the non-government organisation, MSF.

[🔗 FOR MORE INFORMATION VISIT: **MSF.ORG.AU**](#)