PROGRESS IN

SECOND EDITION

GEOGRAPHY

KEY STAGE 3

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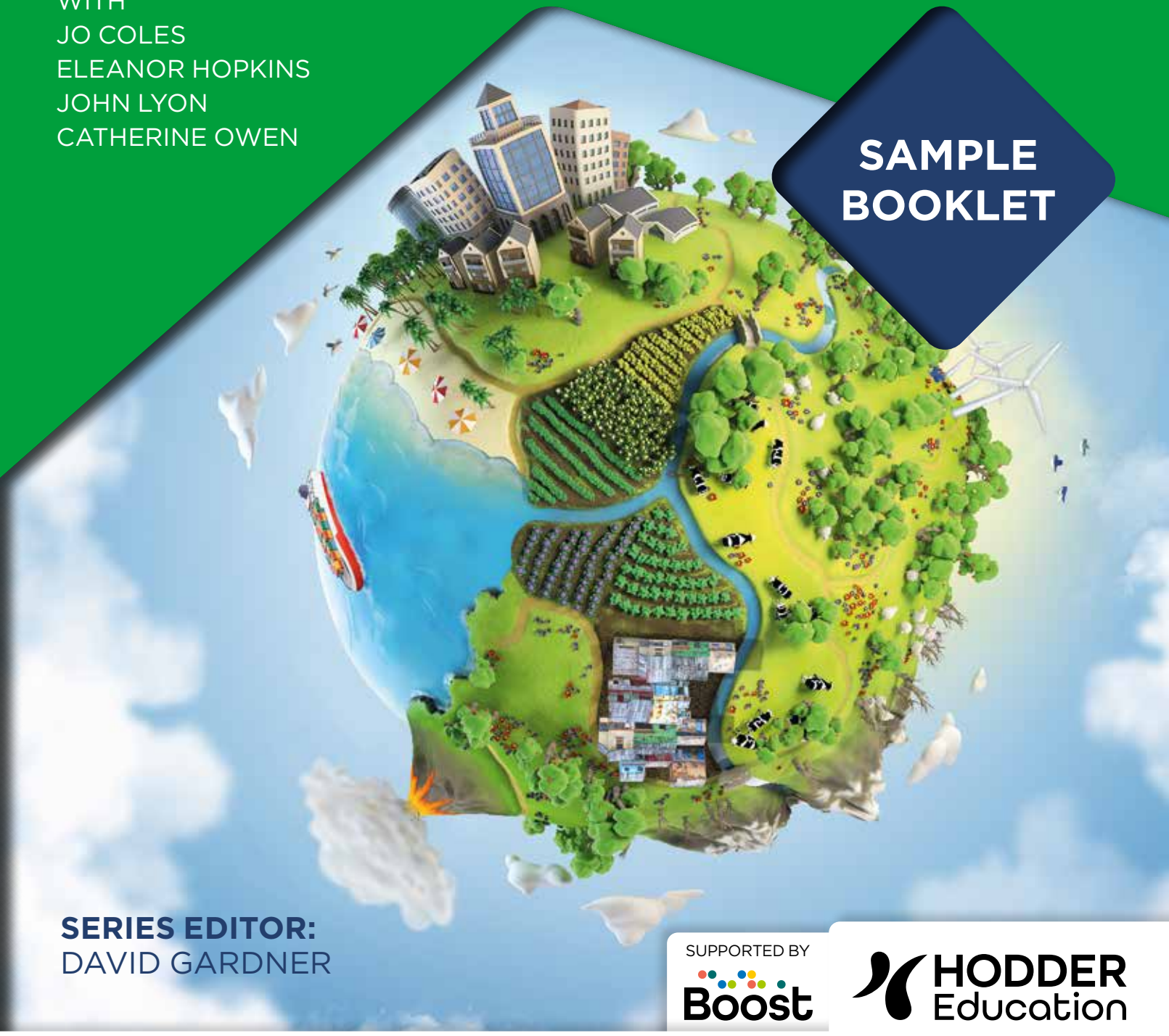

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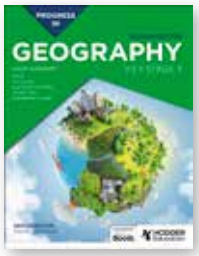

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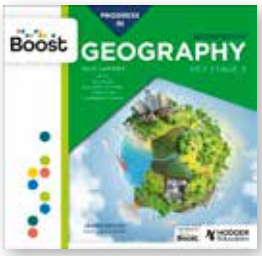

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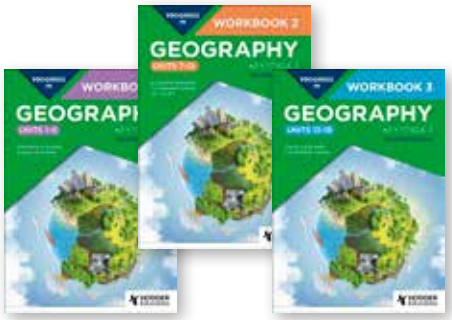

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WELCOME TO THE SECOND EDITION OF PROGRESS IN GEOGRAPHY!

FOR THOSE WHO ARE NEW TO THE COURSE...

Progression is at the heart of Progress in Geography. All the units and lessons are interconnected, so they progress pupils' knowledge, understanding and skills throughout KS3.

Enquiry questions are used in every unit, every lesson and many of the activities, to develop pupils' curiosity about the world. The book contains an abundance of geographical data for pupils to investigate.

Each double-page spread represents one lesson and 180 lessons are provided within the single textbook, ensuring a simple and cost-effective solution to your KS3 Geography resourcing.

The textbook is supported by Boost, which includes all the planning, teaching, assessment and homework resources that you need to teach the course with confidence and ease. There are also three Workbooks to reinforce and review learning.

FOR THOSE WHO ALREADY FOLLOW THE COURSE...

We have increased the number of units in this edition from 15 to 18, to support a full three-year KS3. Brand new units on the Earth's systems and natural hazards have been added, and the population unit has been split into two units, which now investigate population and migration. There are also many new lessons within other units, meaning that almost half of the lessons in total are new.

Much of the geographical data has been updated, including news articles, photos, satellite images, illustrations and diagrams. Activities have been reviewed and improved, providing structure and stepped progress in every enquiry.

Progression is shown even more clearly, with key concepts identified early in the book, and clear signposting in the schemes of work and lesson plans (available in Boost) for the progression of those concepts in later units.

The result of these extensive updates is that we now have a course that is even stronger than the First Edition. I hope that you and your pupils enjoy using the new edition as much as I enjoyed creating it.

Best wishes,

David Gardner

VISION FOR PROGRESS IN GEOGRAPHY

Progress in Geography has been designed to promote curiosity about, and passion for, the world. It has been planned to support you on a learning journey to help you understand the world in the past, present and future.

Through the three interconnected areas of progression shown on this diagram, **Progress in Geography** will enable you to successfully know, think, and work like a geographer.

Progress in Geography will give you the opportunity to:

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Free planning resources, including Progression Framework, available at:
www.hoddereducation.com/progress-in-geography-free-resources

What are we trying to achieve?

Progress in Geography will help you to develop new ways of thinking about the physical, human and environmental aspects of the world, and how they interconnect. The eighteen units of the *Progress in Geography* Key Stage 3 curriculum, have been carefully sequenced to provide stepping stones of learning towards becoming a good geographer. This journey begins in Unit 1: 'What is a geographer?', and continues through each unit, developing each area of the *Progress in Geography* vision statement (see flap).

Progress in Geography provides opportunities for you to progress in three interconnected elements which match the National Curriculum and are key to becoming a good geographer:

Application of geographical skills and enquiry

Work like a geographer

Each lesson in *Progress in Geography*, provides opportunities to work like a geographer, conducting geographical enquiries to answer questions, analysing a wide range of data, including maps, to reach your own judgements, decisions, and conclusions. Each unit has an enquiry title question, and overarching learning objectives, which connect the ten lessons of the unit. The final review lesson in each unit, supports you to reflect on your new knowledge, understanding and skills for the whole unit, and ultimately answer the enquiry title question. You will also progress your ability to write and speak like a geographer, communicating your ideas using a wide range of geographical terminology, introduced in lessons and highlighted in the glossary. You will progress your ability to think critically, considering different viewpoints, detecting bias, social injustice and inequality to reach informed decisions and conclusions, about the challenges the world faces now and in the future.

Geographical understanding

Think like a geographer

The *Progress in Geography* curriculum will help you to build an understanding of the big ideas, or concepts, of geography, and how these are all **interconnected**, to enable you to think like a geographer. These concepts include:

Place	**Space**	**Scale**	**The Earth's systems**

human processes of: Economy Development Population Sustainability

Throughout the course you will be provided with opportunities to make sense of our complex world, to understand that the Earth's physical and human features are shaped by interconnected processes and human choices that change over time and space.

World knowledge of locations, places and geographical features

Know like a geographer

Progress in Geography will develop your locational knowledge of a diverse range of real places, at a variety of scales, from local to global. You will also learn about Russia – the world's largest country by area; the continents of Asia and Africa – which are rapidly changing; and the Middle East – an important world region. These place-based units will enable you to apply the different geographical knowledge, concepts, themes and skills you have learnt in other units, to the context of a place. This will help you to understand the interconnections that exist between places – an essential aspect of being a good geographer. And as you continue your journey, and develop your skills, you will be able to make connections both between lessons and between topics in different units.

The concluding unit – What is the future for our planet? – provides an opportunity for you to reflect on and apply your learning across all the units of *Progress in Geography*, to investigate climate change, identifying causes, consequences and possible actions for the future.

5.9 How is plastic damaging the ocean?

Learning objectives

- To understand why plastic waste in the ocean is a problem.
- To consider how you use and dispose of plastics.
- To identify ways of reducing plastic production and use.

Plastic is a human-made material that comes from oil. Its use has grown rapidly in recent years because it is so versatile and durable. However, its durability is now known to be a huge problem when discarded plastics end up in the ocean (see Poster B). Giant **gyre** garbage patches have developed in each of the world's named oceans, with high concentrations of plastics at their centre. It is estimated that the Great Pacific Garbage Patch alone contains an estimated 79,000 tonnes. Article A highlights the issue of plastic in the ocean.

A Article from the *Guardian* online, 10 June 2021

Takeaway food and drink litter dominates ocean plastic, study shows

Plastic items from takeaway food and drink dominate the litter in the world's oceans, according to the most comprehensive study to date. Single-use bags, plastic bottles, food containers and food wrappers are the four most widespread items polluting the seas, making up almost half of the human-made waste, the researchers found. Just 10 plastic products, also including plastic lids and fishing gear, accounted for three-quarters of the litter, due to their widespread use and extremely slow **degradation**.

The scientists said identifying the key sources of ocean plastic made it clear where action was needed to stop the stream of litter at its source. They called for bans on some common throwaway items and for producers to be made to take more responsibility.

'This information will make it easier for policymakers to actually take action to try to turn off the tap of marine litter flowing into the ocean, rather than just clean it up,' said Carmen Morales-Caselles, at the University of Cádiz, Spain, who led the new research.

In May, **Greenpeace** revealed that UK plastic waste sent to Türkiye for recycling had been burned or dumped and left to pollute the ocean. US and UK citizens produce more plastic waste per person than any other major countries, according to other recent research.

'This comprehensive study concludes that the best way to confront plastic pollution is for governments to severely restrict single-use plastic packaging,' said Nina Schrank, plastics campaigner at Greenpeace UK. 'This seems undeniable. We will never recycle the quantity of waste plastic we're currently producing.'

B **Ocean campaign poster** (Source: HOW LONG UNTIL IT'S GONE?, 2012, Infographics: Oliver Lüde, Museum für Gestaltung Zürich, ZHdK)

Damage to ocean life

Waste plastic in the sea can be devastating for marine mammals (see images in Article A). Plastic bags look similar to jellyfish, the staple diet of leatherback turtles, and fishing nets can look like delicious seaweed. When turtles eat plastic bags, it can make them feel full, eventually leading to starvation.

Poster B highlights the issue of the durability of plastic items. Various organisations around the world have attempted to use floating nets to collect surface plastic from ocean garbage patches, but the patches cover too big an area to be dealt with effectively. After years at sea, battered by waves and storms, plastic eventually breaks down into sizes smaller than a grain of sand, called microplastics. Hundreds of fish species, including many that humans consume, have been found with traces of microplastics in their bodies. Microplastics are almost impossible to remove from the sea.

People need to change how they view and use plastic, and move away from treating plastic as a 'waste' material.

Activities

1 a) Think about how you use plastics on a daily basis. Categorise your use of plastics into two lists – long-life plastics and single-use plastics.
   b) How do you dispose of the plastics you use?
   c) Identify how you could reduce your use of one plastic from each category on your list.
2 Think back to last lesson. Why do you think plastics accumulate in giant gyres?
3 Read Article A.
   a) List the types of plastic items that end up in the ocean.
   b) Write three sentences to explain why you think scientists believe identifying the types of items is important.
   c) Which countries do Greenpeace identify as major producers of plastic waste?
4 How are marine mammals affected by plastics?
5 Look carefully at Poster B.
   a) Draw a bar chart to show the different decomposition rates.
   b) Write three sentences to explain what your chart shows.
   c) Write a conclusion to explain the point that the poster is trying to make.

Stretch and challenge

Conduct internet research on environmental campaigns about plastics in the ocean.
Write a paragraph explaining what can be done.

5.10 Why do we need to understand how the Earth works? Review

In this unit, you have learnt:

- how the Earth works as a system
- how the Earth has evolved over millions of years
- about the concept of geological time
- how people are changing how the Earth's systems work.

Let's see what you have remembered and understood!

As you have discovered in this unit, the Earth exists in a delicate balance, with its spheres evolving in harmony over millions of years. The Earth maintains this balance by recycling and storing carbon, water and nutrients.

A Greenpeace leaflet 'Against all odds', 1989

Planet Earth is 4,600 million years old

If we condense this inconceivable time-span into an understandable concept, we can liken the Earth to a person of 46 years of age.

Nothing is known about the first seven years of this person's life, and whilst only scattered information exists about the middle 35 years, we know that only at the age of 42 did the Earth begin to flower.

Dinosaurs and the great reptiles did not appear until one year ago, when the planet was 45. Mammals arrived eight months ago; in the middle of last week, human-like apes evolved into ape-like humans, and at the weekend the last ice age enveloped the Earth.

Modern humans have been around for four hours. During the last hour, we discovered agriculture. The industrial revolution began a minute ago. During those 60 seconds of biological time, humans have made a rubbish tip of Paradise. We have caused the extinction of many hundreds of animal species, ransacked the planet for fuel and now stand like brutish infants, gloating over this meteoric rise to ascendency, on the brink of the final mass extinction effectively destroying this oasis of life in the solar system.

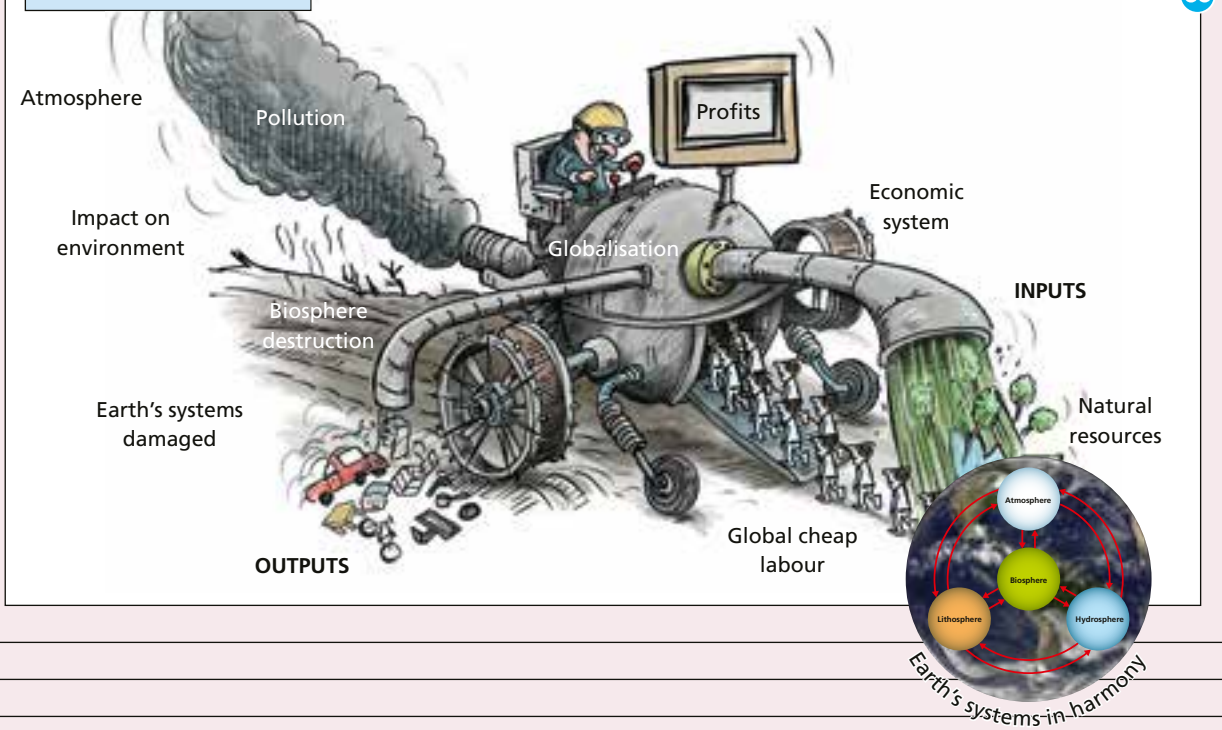
B Political cartoon in a layers of inference diagram

What extra questions do I need the answers to?

What does this source not tell me about this issue?

What can I infer? What guesses can I make?

What does this source tell me?



Human impact on how the Earth works

Humans have had a massive impact on the Earth in a very short period of time. Modern economic growth is driven by the need for short-term profits. In order to achieve this growth, humans have exploited the Earth's natural resources, without thinking of the long-term damage they are causing. Production and consumption of products creates waste, some of which, as you discovered in the last lesson, is dumped in the oceans. Leaflet A and Cartoon B provide opportunities for you to reflect on why it is vital that we understand how the Earth works.

Future learning

You will progress your understanding of the interactions between the Earth's spheres, and the ways in which humans are changing the environment, throughout the book, concluding with Unit 18, What is the future for the planet ?

Review Activities

1 On a copy of Diagram A from Lesson 5.1:
   - **a)** Think about what you have learnt about the Earth's spheres in this unit and annotate your diagram to summarise what you have discovered about how the spheres interconnect and work together.
   - **b)** Using a different colour, on your diagram annotate examples of the ways people are changing the interactions of the Earth's systems.
   - **c)** On another copy of Diagram A, annotate how people are starting to change these interactions between the spheres.

2 Look carefully at Leaflet A.
   - **a)** Write a paragraph to explain the key points made in the leaflet.
   - **b)** Why do you think Greenpeace focused on geological time in the leaflet?

3 Look at Cartoon B. It is surrounded by questions that a geographer would ask when thinking about geographical data, such as this political cartoon. It is called a 'layers of inference' diagram. It is useful when thinking about the conclusion to a piece of work. This political cartoon is excellent for progressing your understanding of this unit and how people are affecting the Earth's systems, as well as your understanding of natural resources in Unit 2 and the economy in Unit 3.
   - **a)** Why do you need to think about what you have learnt in Units 2 and 3 as well as this unit to consider the questions on the diagram?
   - **b)** Starting from the middle, write down each of the questions as headings (or your teacher might give you a copy of B to write on).
   - **c)** For the first question, identify exactly what the cartoon is showing. Think about and answer the following:
     - **i)** How is the cartoonist representing globalisation?
     - **ii)** What are being suggested as key factors that determine where industry locates?
     - **iii)** How are each of the Earth's spheres affected by globalisation?
   - **d)** Think about the next zone of questions. For example, what do you think the cartoonist's views are about the Earth and its biomes, sustainability and globalisation? What do you think the driver in the cartoon might be thinking?
   - **e)** In the third question layer, think beyond this cartoon. What have you learnt in each lesson of this unit, as well as Units 2 and 3, that agrees or disagrees with the cartoon's message?
   - **f)** For the final layer, think about and write down geographical questions you would like to investigate to further explore the big ideas of Earth's systems, globalisation and sustainability.

4 Write a paragraph to answer the enquiry title for this unit: Why do we need to understand how the Earth works?

8.7

What progress has been made towards the Sustainable Development Goals?

Learning objectives

- To understand the Sustainable Development Goals (SDGs).
- To appreciate the purpose of the SDGs.
- To consider the progress that has been made towards meeting the SDGs.

The United Nations (UN) is an international organisation of 193 countries. It was established in 1945, at the end of the Second World War. It aims to bring nations together to prevent future conflict.

In 2015, all UN member countries agreed 17 **Sustainable Development Goals (SDGs)**, to be achieved by 2030 (see Poster A). These SDGs call for action by all countries to end poverty, fight inequality and injustice, and promote environmental sustainability. The goals are not legally binding, but the UN monitors governments to see if they are working towards the goals. The year 2023 was just beyond the halfway point for the goals to be achieved. In this lesson, you will consider what progress has been made.

A The 17 UN Sustainable Development Goals

> *A sustainable world is one where people can escape poverty and enjoy decent work without harming the Earth's essential ecosystems and resources; where people can stay healthy and get the food and water they need; where everyone can access clean energy that doesn't contribute to climate change; where women and girls are afforded [given] equal rights and equal opportunities.*

B Former UN Secretary-General Ban Ki-moon speaks in 2015 about the importance of the Sustainable Development Goals

C UN Deputy Secretary-General Amina Mohammad commenting at the opening of the Arab Forum for Sustainable Development in 2023 about progress towards the SDGs at the halfway point

> *Let me be frank: we are not doing well. Our progress towards the Sustainable Development Goals has faltered and even gone into reverse on some important targets and goals. Multiple interconnected, cascading crises are playing out on a global stage that is divided and slow to respond. The wars and the impacts of the triple planetary crisis of climate, biodiversity loss and pollution are threatening food security and water availability.*

HOW MUCH PROGRESS IS BEING MADE ON THE UN'S SUSTAINABLE DEVELOPMENT GOALS?

The Sustainable Development Goals Report 2022 paints a worrying picture of progress in almost all goals. Here's a breakdown of where some of the goals are at:

1 NO POVERTY

The report says four years of progress reducing poverty has been erased by the Covid-19 pandemic. Rising inflation and the war in Ukraine have caused further setbacks. It is estimated that as many as 676 million people are living in extreme poverty worldwide, almost 100 million more than the pre-pandemic projection.

2 ZERO HUNGER

The UN estimates as many as 828 million people may have suffered hunger in 2021. The Ukraine crisis has caused dangerous food shortages for the world's poorest people.

3 GOOD HEALTH AND WELL-BEING

Covid-19 is threatening decades of progress on global health. By mid-2022, half a billion people had been infected worldwide. Consequent widespread disruption to health systems has also derailed progress against preventable diseases such as HIV, TB and malaria.

4 QUALITY EDUCATION

The pandemic has caused severe disruption to education systems. An estimated 147 million children missed over half of in-person teaching in 2020 and 2021. The UN says governments must implement ambitious programmes to recover learning losses.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

A growing reliance on natural resources has set the Earth on an unsustainable course. This is causing the triple planetary crises of climate change, biodiversity loss and pollution. The UN says transforming our relationship with nature is key to a sustainable future. It calls on governments and citizens to work together to reduce waste and pollution.

D **Online news article, 21 September 2022**
Source: World Economic Forum

Activities

1 Read Poster A and Quote B.
   - **a)** Write three sentences to explain what the Sustainable Development Goals are.
   - **b)** Write a paragraph to explain why sustainable development is so important for the future of people and the planet.
   - **c)** Give two reasons why it is important that the SDGs apply to all countries, not just those with lower levels of development.

2 Look closer at Poster A.
   - **a)** Think about what you have learnt so far in *Progress in Geography*. List the SDGs and issues you have already explored.
   - **b)** List the SDGs you are unsure about. You will learn more about these in future units.
   - **c)** Compare Poster A with vision statement flap. Write a paragraph to identify how the SDGs demonstrate the world working together as good geographers.
   - **d)** Draw a Development Compass Rose (see Lesson 8.1, Diagram F), and group the SDGs according to the compass categories.
   - **e)** Which three goals do you think are the most important? Justify your choices.

3 Read Quote C and Article D about progress towards the SDGs at the halfway stage.
   - **a)** Give four reasons why progress towards the SDGs has been limited since 2020.
   - **b)** Write a summary of the evidence, showing the lack of progress in the five SDGs shown in Article D.

Future learning

The next two lessons will focus on two of the SDGs.

8.9 How can gender equality lead to development?

Learning objectives

- To be aware of gender inequality.
- To appreciate that gender equality can lead to higher levels of development.

Gender equality is a fundamental human right. **Gender inequality** occurs when men or women are treated differently and given different opportunities in life. Gender inequality occurs all over the world, as shown in Fact file A. Map D indicates that progress towards gender equality is unevenly distributed globally. Sustainable Development Goal 5 identifies a series of targets for countries to work towards to ensure equal rights for all genders by 2030. The UN believes, however, that gender equality is the key driver for all 17 SDGs, as shown in Quotes B and C. Women and girls represent half of the world's population and half of its potential. No society can develop economically, politically or socially when half of its population is marginalised.

A Gender inequality fact file

5 GENDER EQUALITY ⚥

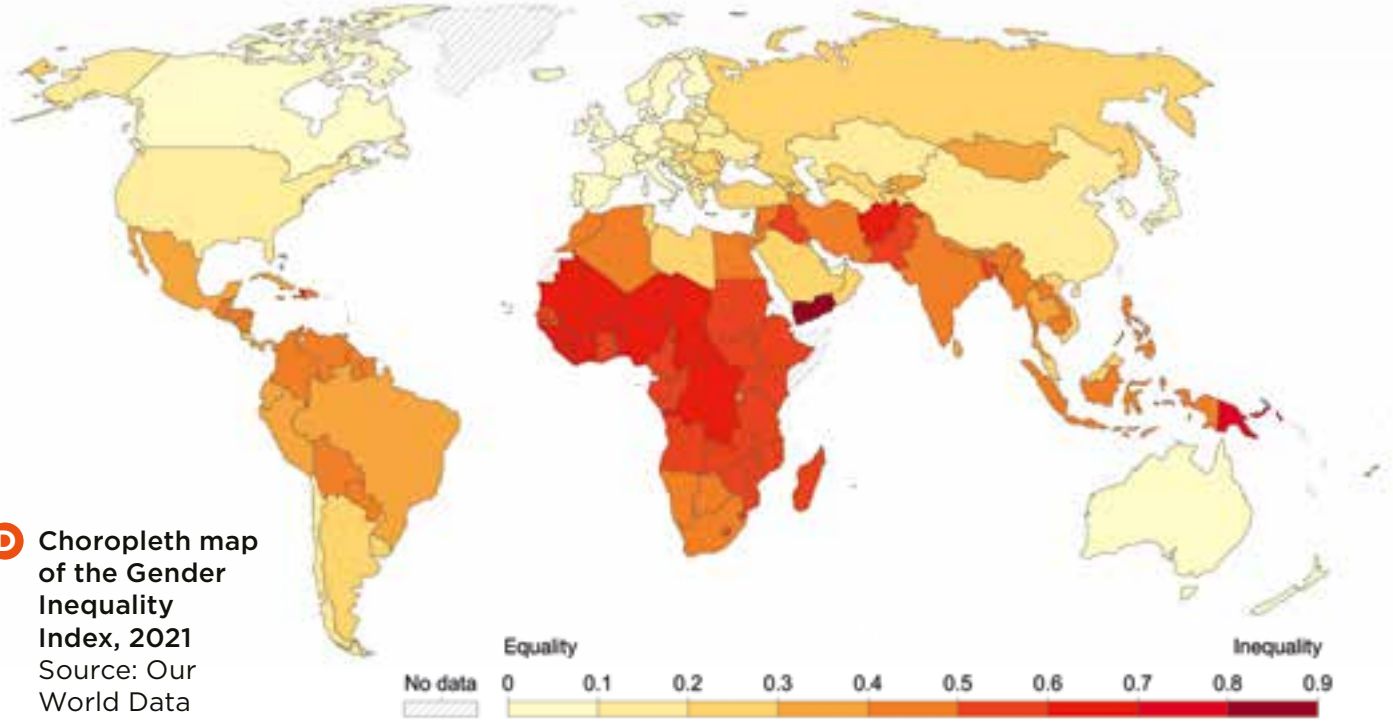
- Gender inequality is a major cause and effect of hunger and poverty. It is estimated that 60 per cent of chronically hungry people are women and girls (WFP Gender Policy and Strategy).
- More women than men in the world live on less than US$2.15 a day.
- In 2021, nearly one in five young women globally were married before the age of 18.
- Every day, 830 women die from preventable causes related to pregnancy and childbirth around the world. Globally, that amounted to about 303,000 women in 2015.
- Women make up more than two-thirds of the world's 796 million illiterate people (UN, 2022).
- Every additional year of primary school increases girls' eventual wages by 10–20 per cent. It also encourages them to marry later and have fewer children, and leaves them less vulnerable to violence.
- Violence against women and girls is found in all countries and affects women of all ages. Globally, 26 per cent of ever-partnered women aged 15 and older (641 million) have been subjected to physical and/or sexual violence by a husband or intimate partner at least once in their lifetime (UN SDG report, 2021).
- Only 57 per cent of women aged 15 to 49 who are married or in a union make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care, according to data from 64 countries for the period 2007–2021.
- As of 1 January 2022, the global share of women in lower and single houses of national parliaments reached 26.2 per cent, up from 22.4 per cent in 2015.
- In the UK, in 2019, women were, on average, more likely to enter the workforce with higher qualifications than men, but earned less per hour.
- Women do the majority of unpaid work in the UK, such as cooking, cleaning and caring – on average, around 60 per cent more than that undertaken by men.

Gender equality is more than a goal in itself, it is a precondition for meeting the challenge of reducing poverty, promoting sustainable development and building good governance.

B Kofi Annan, UN Secretary General, 1997–2006

Women's and girls' contributions, experiences and approaches benefit everyone. The math is simple. Without the contributions of half their members, societies will only fulfil half their potential. And I will often say that a bird does not fly on one wing. We need the full contributions of all, to build inclusive, sustainable economies and societies for the future.

C UN Deputy Secretary-General, Amina Mohammad, 2023



D Choropleth map of the Gender Inequality Index, 2021
Source: Our World Data

Gender Inequality Index

As part of its work on the Human Development Report, the UN includes a composite index called the Gender Inequality Index (GII), Map D. This measures inequalities on three dimensions:

- reproductive health (based on maternal mortality ratio and adolescent birth rates)
- empowerment (based on proportion of parliamentary seats occupied by females and proportion of adult females aged 25 years and older with at least some secondary education)
- economic status (based on employment rates of female and male populations aged 15 years and older).

The index ranges from 0, where women and men fare equally, to 1, where women experience inequality in most dimensions.

Activities

1 Read Fact file A on gender inequality.
   - **a)** Discuss an example of gender inequality and gender equality with a partner.
   - **b)** Write definitions of 'gender equality' and 'gender inequality', providing an example of each.
   - **c)** Discuss Fact file A with a partner. Which do you think shows the greatest inequality? Summarise and justify your choice.

2 Read Quotes B and C.
   - **a)** Give two reasons why the UN SDGs includes Goal 5.
   - **b)** Explain in three sentences why the UN believes gender equality is vital to all 17 SDGs.

3 Compare Fact file A to Lesson 8.7, Poster A. Identify five other SDGs that link to the gender inequality facts. Justify your choices.

4 Look carefully at Map D.
   - **a)** Describe the forms of inequality the UN uses to calculate the GII.
   - **b)** Write a sentence to explain the scale the GII uses to show inequality.
   - **c)** Describe the distribution of countries:
     - **i)** that are approaching gender equality
     - **ii)** where women experience the highest levels of gender inequality.
   - **d)** Compare Map D with the choropleth maps in Lessons 8.2–8.4 to identify similarities and differences in the patterns of development and gender inequality.

5 Write a paragraph to explain why equality for girls and women is likely to lead to the development of countries around the world.

10.9 What are sustainable cities?

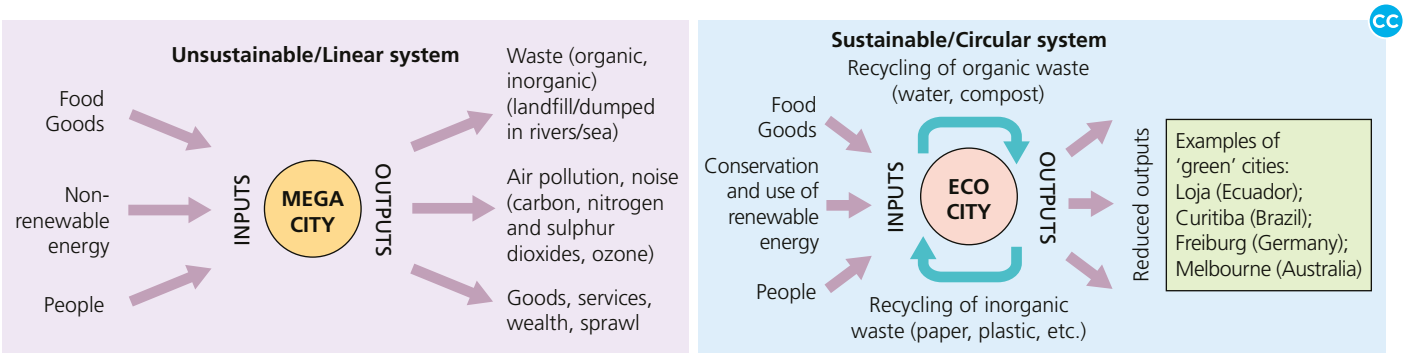
Learning objectives

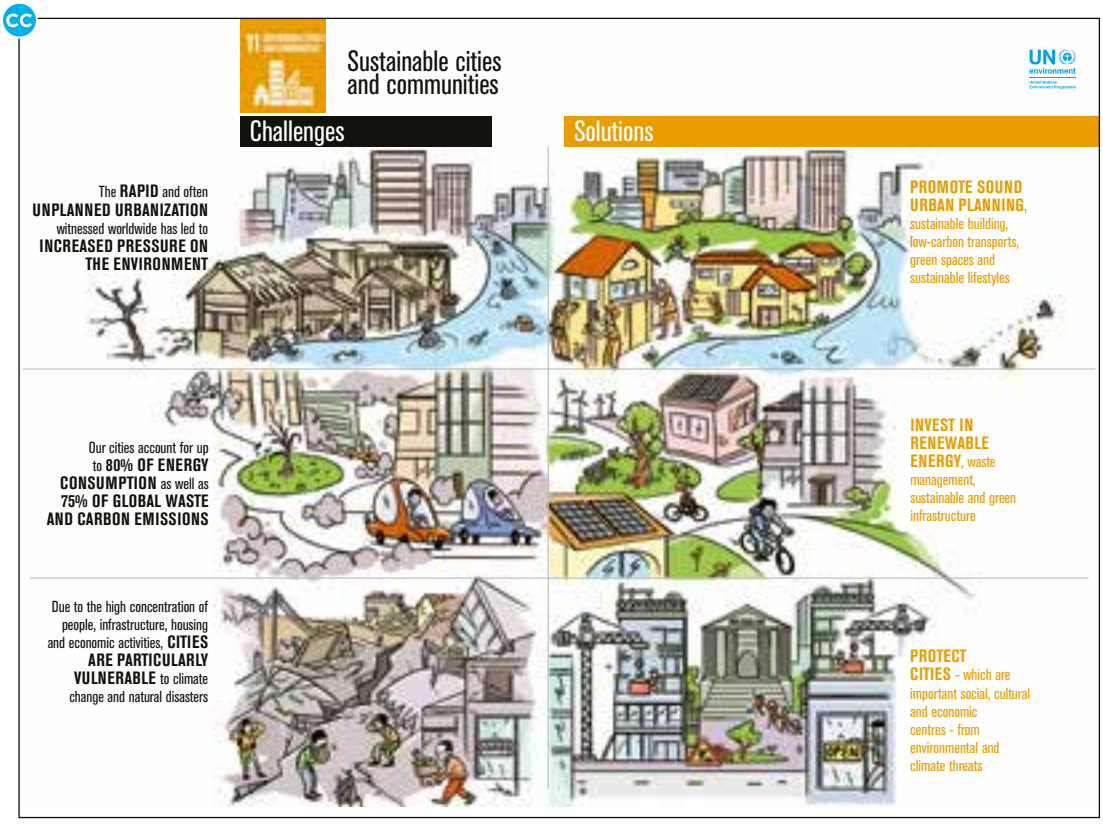
- To understand what makes cities sustainable.
- To understand sustainable cities as a systems model circular economy.
- To investigate aspects of London's environmental plan.

A **sustainable city** is one that uses resources carefully to meet the needs of its population, while improving their lives, now and in the future. The two system models shown in Diagram A apply linear and circular economies that were introduced in Lesson 8.10 to show the differences between an unsustainable and a sustainable city. The rapid urbanisation you have investigated in Lessons 10.5–10.8 is unsustainable. Graphic B summarises some of the challenges this has created.

A sustainable city is one designed to address social, environmental and economic impacts through urban planning and city management. Examples of this are provided in Graphic B. Screenshot C shows the key elements of London's environment strategy, which is working towards UN Sustainable Development Goal 11.

A **System models for unsustainable and sustainable cities**

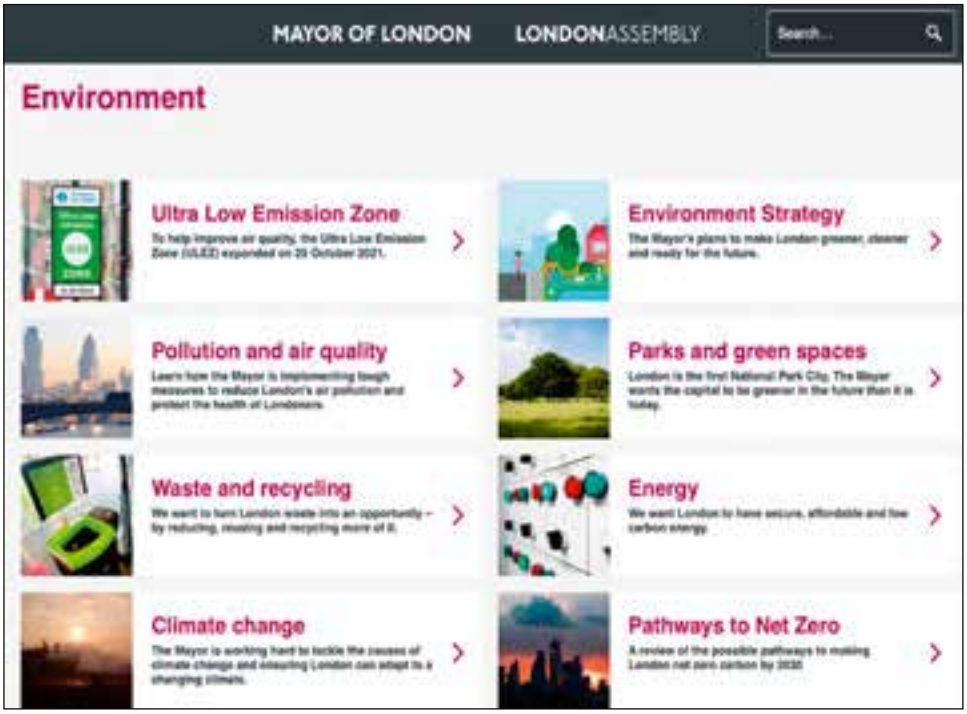




B **Graphic for the United Nations Sustainable Development Goal 11: Sustainable cities and communities**

London is committed to a sustainable future

The Mayor of London has laid out plans for the capital to be a net-zero carbon, zero pollution city by 2030, as well as a zero waste city by 2050. London is the world's first National Park City. At present, 45 per cent of the city is open green space, and there are plans to increase this to 50 per cent by 2050. The capital is a city for walkers, cyclists and public transport users.



C **Screenshot from london.gov.uk showing elements of the environment strategy for the city**

Activities

1 Write a definition for sustainable cities.

2 Compare the models shown in Diagram A.
- **a)** How do these models apply linear and circular economy models introduced in Lesson 8.10.
- **b)** Identify and list four differences between an unsustainable and a sustainable city.
- **c)** Write three sentences to explain how cities can become more sustainable.

3 Look carefully at Graphic B.
- **a)** Make a copy of the following table:

Challenge	Solution	Example

- **b)** Record each challenge and solution, identified by the UN, in your table and provide an example of what you think can be done to create a more sustainable city.

4 Look carefully at Screenshot C.
- **a)** List the key targets for sustainability in London.
- **b)** Identify and list the key elements of London's environmental plan.

5 **a)** Working with a partner:
- **i)** Go to London's Environment and Climate Change webpage: www.london.gov.uk/programmes-strategies/environment-and-climate-change
- **ii)** Investigate one key element of the plan and record your findings.
- **iii)** Compare your findings with other groups who have investigated different elements.

b) Write a paragraph explaining how London is attempting to become a sustainable city.

Stretch and challenge

Think about your local community. Visit your local council website and search for the local area environmental plan. Identify ways it is becoming more sustainable.

The **unit title** engages pupils with the overarching enquiry question that they will explore throughout the unit

17 17.1 Are natural disasters 'natural'?

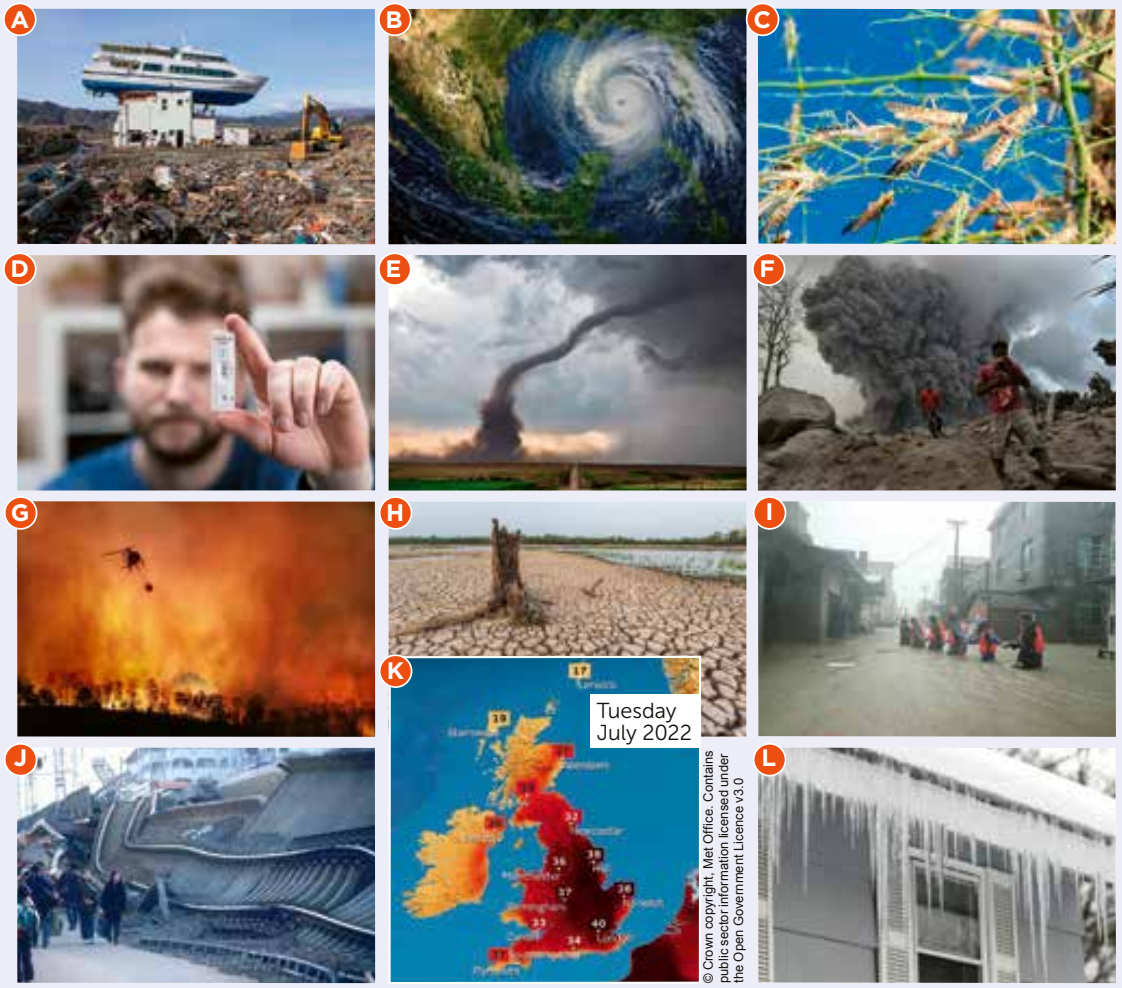
In this unit, you will learn:

- how natural hazards pose a risk of death or injury, and disruption to daily life
- some of the causes of natural hazards
- where such hazards occur in the world
- how human choices and actions create vulnerability to natural hazards, leading to disasters.

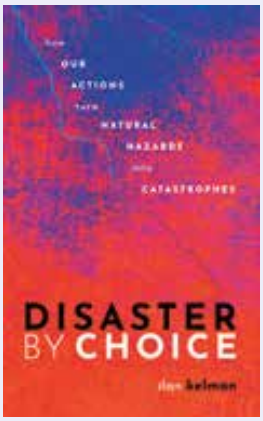
Unit objectives outline the main content in the unit so that pupils are aware of the learning journey ahead

In Unit 5, you investigated a key question – why do we need to understand how the Earth works? You have investigated natural processes and events throughout *Progress in Geography* and explored their interconnection through this important question. In this unit, you will investigate some examples of **natural hazards** and how they affect people. You will consider how important it is to understand and prepare for the risks these hazards can pose.

Examples of natural hazards are shown in the photo mosaic, A–L. They are all part of the physical processes and interactions in the Earth's spheres and systems. These natural hazards turn into **natural disasters** when the population they affect is unprepared and unable to deal with them.



FEATURES IN THE UNIT OPENER PAGES



M ***Disaster by Choice*** **by Ilan Kelman**

Are natural disasters 'natural'?

Ilan Kelman defines the term 'disaster' as 'a situation requiring outside support for coping'. He believes that it is human decisions that create the disaster, not nature. Decisions made or not made create vulnerability. He states on page 16 of his book, 'Vulnerability means that people do not have the resources, knowledge, or choices available to stop nature from harming them'. In this unit, you will apply these ideas (Quote N, from the book's preface) to investigate different natural hazard events around the world.

Disasters are not natural. We create them … the tornado, the earthquake, the tsunami are not to blame. The disaster consists of our inability to deal with them … we have the knowledge, ability, technology and resources to build houses which are not ripped apart by 400 kilometre per hour winds. We can shun places likely to be hit by lava and tsunamis … we can create a culture … with warning and safe evacuation. Many of the choices we make currently permit death and devastation. We can choose to avoid disasters, and that means disasters are not natural.

N **Ilan Kelman, the author of *Disaster by Choice*, is Professor of Disasters and Health at University College London**

Activities

1 Look in the Glossary at the back of the book and write definitions for natural hazards and natural disasters.

2 Photos A–L in the natural hazards photo mosaic show different hazards formed by a physical process or interaction between the Earth's spheres. For each photo:
- **a)** Identify what natural hazard you think is shown.
- **b)** Write a sentence to explain your choice.
- **c)** Look back at Unit 5 and decide which of the Earth's spheres are interacting to create the hazard.
- **d)** Write a sentence to explain your choice.
- **e)** Give an example of how you think the hazard shown can become a disaster.

3 Read the views of Ilan Kelman in Quote N.
- **a)** Who is Ilan Kelman?
- **b)** Write a paragraph to explain what he is suggesting about natural disasters.

4 Look back at Unit 13, Lessons 13.6, 13.7 and 13.10, Resources D and E (page 261). Write a paragraph to explain whether you think the Nepal earthquake was a natural disaster or, using Kelman's term, a 'disaster by choice'.

5 As you investigate different natural hazards in this unit, keep a log of each hazard.
- **a)** Create a table to record your findings:

Type of natural hazard	Earth's sphere	Location – latitude and longitude	Impact – short and long term	Natural disaster or 'disaster by choice'?

- **b)** Plot each location you investigate on an outline map of the world.

6 Discuss with a partner a natural hazard/disaster you have seen reported in the news. What was it like? How did it make you feel? Was it natural or a 'disaster by choice'? Share your discussion points with the class.

The **lesson title** introduces the key enquiry question that pupils will answer through the activities and resources on the double-page spread. Every question is designed to get pupils thinking straight away

17.2

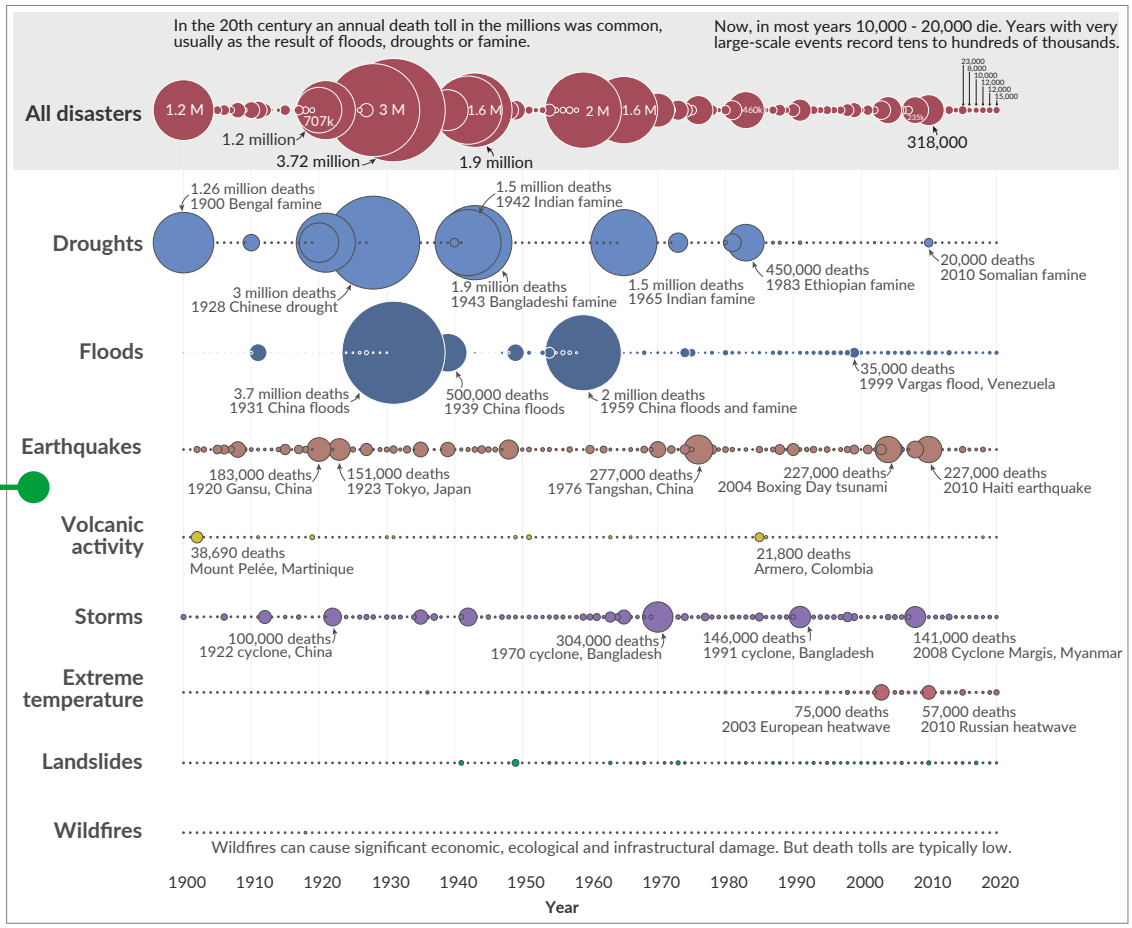
Which parts of the world are vulnerable to natural hazards?

Learning objectives

- To understand which natural hazards cause most deaths.
- To understand why the number of deaths from natural events each year changes.
- To know which parts of the world are at risk from natural hazards.

Learning objectives focus pupils on what they will achieve in each lesson and help them to track their progress through the course

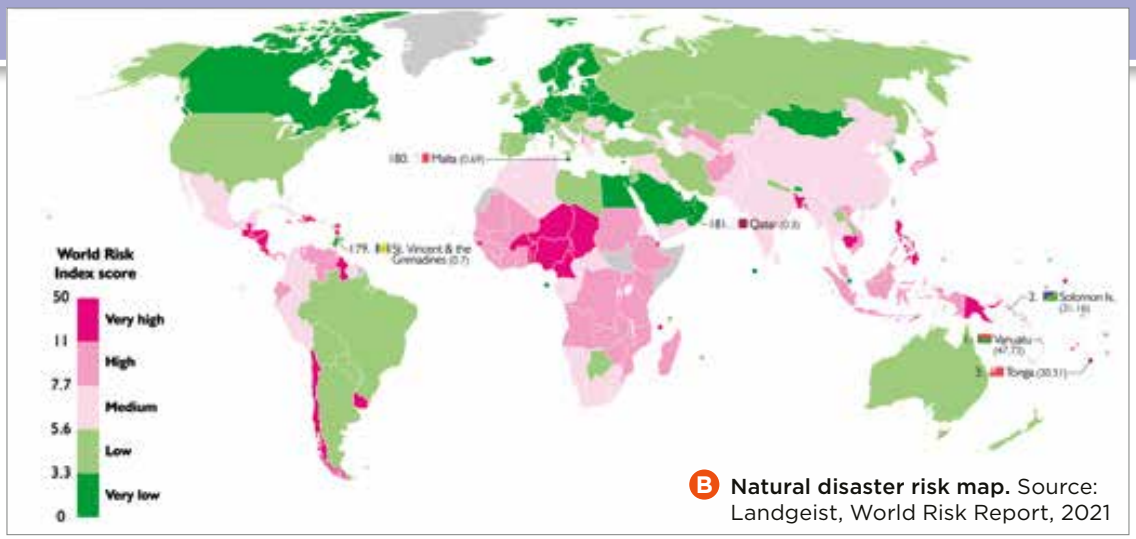
Graph A shows a bubble chart representing the number of deaths from natural events over the last century. It shows the estimated annual death toll from all disasters at the top, followed by a breakdown by type. In more recent years, the world has not experienced the larger death tolls of the past. This trend does not mean that natural hazards have become less frequent or less intense. It means overall the world today is much better at preventing deaths from disasters than in the past , although the more than 50,000 deaths in the 2023 Türkiye/Syria earthquake, studied in Lesson 13.1, shows that hazards can still have a devastating impact. Disasters tend to occur when a natural hazard is near a vulnerable population. You will investigate the causes and impact of this vulnerability in future lessons in this unit.



Rich **geographical data** develops pupils' ability to interpret, analyse and evaluate the maps, charts, tables, photos and sources as they complete the lesson's activities

A **Global deaths from natural disasters, 1900–2020.** Source: Our World in Data

FEATURES IN THE MAIN LESSON PAGES



B Natural disaster risk map. Source: Landgeist, World Risk Report, 2021

The World Risk Index

The World Risk Index and World Risk Report are compiled and published each year by an organisation in Germany. They are an assessment of the risk to countries of natural hazards becoming disasters. This risk report is intended to raise awareness of disaster risks around the world to support world leaders and other decision makers, to prevent such risks.

The Risk Index is made up of 27 data indicators for 181 countries and covers almost 99 per cent of the world's population. The data used covers the frequency of hazards occurring in different parts of the world, as well as an indication of a country's ability to cope with hazards. The organisation that develops the report believes that a society that is insufficiently prepared will be more vulnerable to natural events than one that is better prepared. Put simply:

Risk of natural hazards + Vulnerability = Risk of disaster

The index for 2021 is shown in Map B, with scores grouped into five categories.

Activities

1 Look carefully at Graph A.
- **a)** Write three sentences to explain how the world's annual death toll from natural disasters has changed over the last 120 years.
- **b)** Look back at Lessons 13.7 and 13.9 about volcano and earthquake risk management and write a paragraph to explain why the world's death toll has changed.
- **c)** Write a sentence to explain why the numbers of deaths change each decade.
- **d)** Rank each natural hazard by death toll, with the largest first.
- **e)** Give two reasons for this rank order.

2 Look carefully at Map B.
- **a)** What is the World Risk Index, and why is it calculated each year?
- **b)** Identify which parts of the world have the highest and which have the lowest risk.
- **c)** Think about what you discovered about Africa and Asia in Units 12 and 14, and write a paragraph to explain the pattern of risk in those continents.
- **d)** Compare Map B with Map C in Lesson 8.2, page 145. Write a paragraph to explain the similarities and differences between risk and development, measured by GNI per capita.

3 Write a paragraph to explain how the data shown in Graph A and Map B relate to Ilan Kelman's ideas in his book *Disasters by Choice* (see page 323).

Activities progressively build pupils' skills, knowledge and understanding of the key concepts in the lesson. Some pages include additional stretch and challenge activities

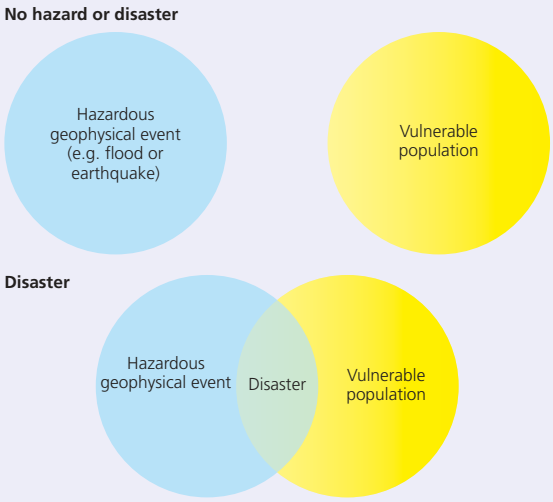
17.10 Are natural disasters 'natural'? Review

In this unit, you have learnt:

- how natural hazards pose a risk of death or injury, and disruption to daily life
- some of the causes of natural hazards
- where such hazards occur in the world
- how human choices and actions create vulnerability to natural hazards, leading to disasters.

Let's see what you have remembered and understood!

The **learning objectives** from the unit opener pages are revisited, showing pupils what they have learnt



A Degg's disaster model

#NoNaturalDisasters

Our aim

We want to change the way organisations, politicians, the media and people **in positions of power talk about disasters**.

We want to make sure that when a hazard creates a disaster because of actions taken by humanity (even historic decisions), that those in positions of power **do not blame nature or use it as a convenient tool to avoid responsibility**.

We will work to ensure (before, during and after a disaster) that those with the power to **reduce vulnerability, exposure and risk** are held accountable for their decisions, especially when those decisions increase the damage, loss and suffering associated with disasters.

B No NaturalDisasters website

Not all natural hazards become disasters. A disaster occurs when a hazardous natural event combines with a vulnerable population – as shown in Model A. Factors that create vulnerabilities are shown on Mind map C.

The UN Office for Disaster Risk Reduction acknowledges this and has started a #NoNaturalDisasters campaign to encourage people not to use the term 'natural disasters' (Image B).

Review Activities

1 Working with a partner, study the sets of words in the table below.
   - **a)** Decide which word from each set is the odd one out.
   - **b)** Write a sentence to justify your choice in each case.
   - **c)** What do the 'odd one out' words in each set, A–D, have in common?

Set	Which is the odd one out?
A	hurricane tornado drought Covid-19
B	locusts volcano earthquake tsunami
C	river flooding wildfire tidal surge coastal wave action
D	heatwave malaria extreme cold lightning

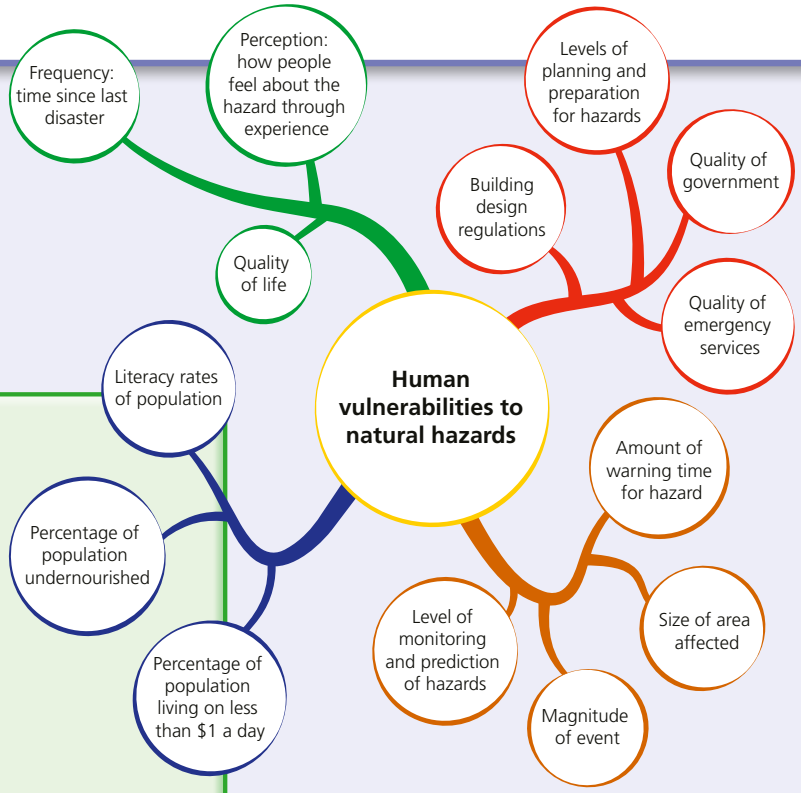
2 In 1992, a university geographer, Dr Martin Degg, devised Model A. Write a paragraph to explain what the model shows about the relationship between natural hazards, human vulnerability and disasters.

3 Look carefully at Image B.
   - **a)** Who has been involved in developing this campaign?
   - **b)** What is the aim of the campaign?
   - **c)** Why do they believe it is important to stop using the term 'natural disasters'?

4 Look carefully at Mind map C.
   - **a)** Divide the factors shown into different categories.
   - **b)** Write a sentence for each category of factors, identifying how they can lead to vulnerability to a natural hazard.
   - **c)** Use your log from Lesson 17.1, question 5, to identify which of the factors shown in Mind map C apply to each of the natural hazards investigated in this unit. You can either create a table to record this or add it to your log.

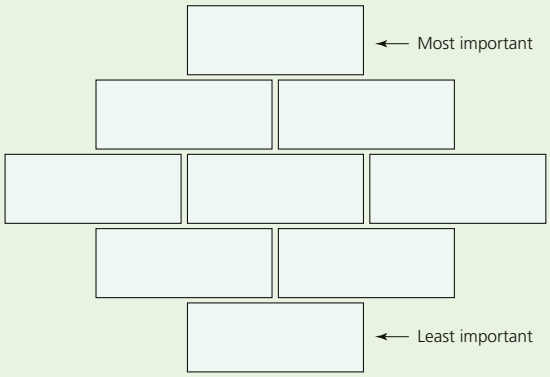
FEATURES IN THE UNIT REVIEW PAGES

In this lesson, you will reflect on what you have discovered about how factors that make populations vulnerable turn hazards into disasters. You can use the log you have been adding to in each lesson (Lesson 17.1, question 5) to help review your learning.



C Mind map showing human vulnerabilities to natural hazards

5 Working in a group:
   - **a)** Discuss the significance and importance of each of the factors shown in Mind map C and their contribution to natural hazards leading to disasters.
   - **b)** Use a diamond nine organiser, like the one shown here, to rank the factors.



   - **c)** Write a paragraph to justify your choices.

6 Think about each of the disasters you have studied in this unit. For each one, identify an action that would reduce the risk and vulnerability for the people in the area.

7 Write a paragraph to answer the unit enquiry question: Are natural disasters 'natural'?

Future learning

In Unit 18, you will investigate how the frequency of natural hazards will increase in the future as a result of climate change. This is the global 'disaster by choice' that is increasing human vulnerability to changes in the Earth's systems.

Future learning at GCSE

You will further progress your understanding at GCSE investigating the causes, consequences of and responses to extreme weather conditions and natural weather hazards.

Future learning helps pupils to make connections to later units, as well as topics they will study if they take GCSE Geography

Review activities enable pupils to check and apply the skills, knowledge and understanding they have developed in that unit. Both pupil and teacher can see what progress has been made

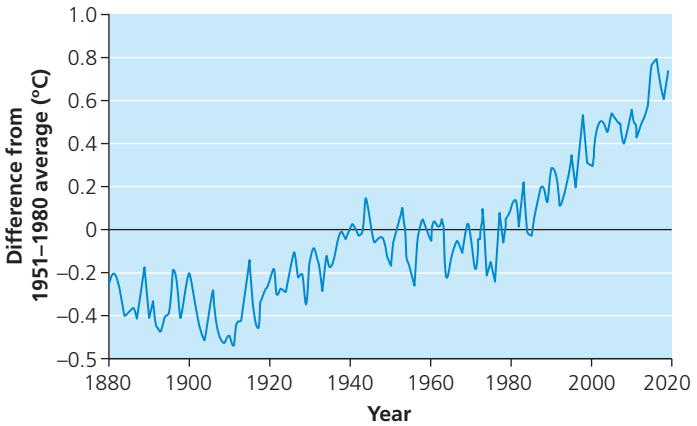
18.2 What is the evidence for climate change?

Learning objectives

- To identify evidence of climate change.
- To apply understanding of ideas in earlier units.

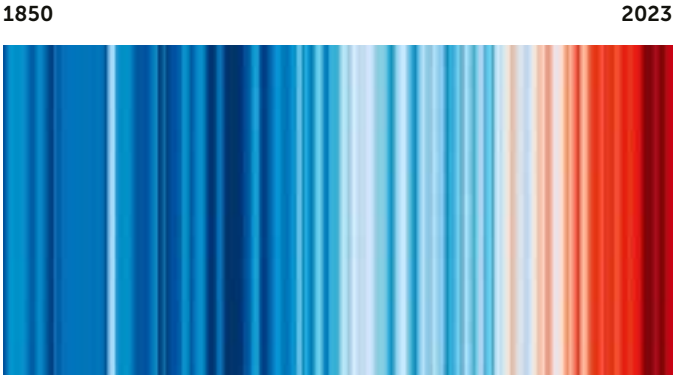
A ***Progress in Geography*** **interconnections with climate change**

- Consider how the Earth's spheres interact and are interdependent (Unit 5).
- Remember the principles that explain how the atmosphere, weather and climate work (Unit 4).
- Reflect on how people use natural resources as the basis for economic growth, trade and development, driven by energy in all its forms, in a linear economy (Units 2, 3 and 8).
- Think about how people strive to improve, to have happy, healthy lives, and the inequalities many people need to overcome to achieve a good quality of life (Units 8, 12, 14 and 16).
- Recognise that the world's population has grown rapidly, and many places in the world are overcrowded (Units 9, 12 and 14).
- Apply your understanding of how glaciers are changing, rivers are flooding and coastlines are eroding (Units 7, 11 and 15).
- Consider how weather and climate are becoming more extreme, causing disasters with people having made choices that make others more vulnerable (Unit 17).



C **Graph to show changes in annual global temperatures, 1880–2020**

In Lesson 18.1, David Attenborough suggests that scientists present the evidence of climate change to allow people to make up their own minds about what action to take in response. To do this effectively you need to think like a geographer, applying what you have learnt about the world across the units in this book (see Box A). Most importantly, you need to investigate the evidence of climate change gathered by scientists and presented in this lesson (see B to E).



B **Climate Stripes – no words, no graphs. Created by Professor Hawkins, University of Reading, 2018, https://showyourstripes.info. Each stripe represents the average temperature for a single year, relative to the average temperature over the period as a whole. Shades of blue indicate cooler-than-average years, while red shows years that were hotter than average**

Activities

1 Look carefully at Box A, which shows some of the prior learning in *Progress in Geography*. Write five sentences to explain why you think it is important that you consider this prior learning when investigating the evidence of climate change.

2 Look at the climate stripes in Image B.

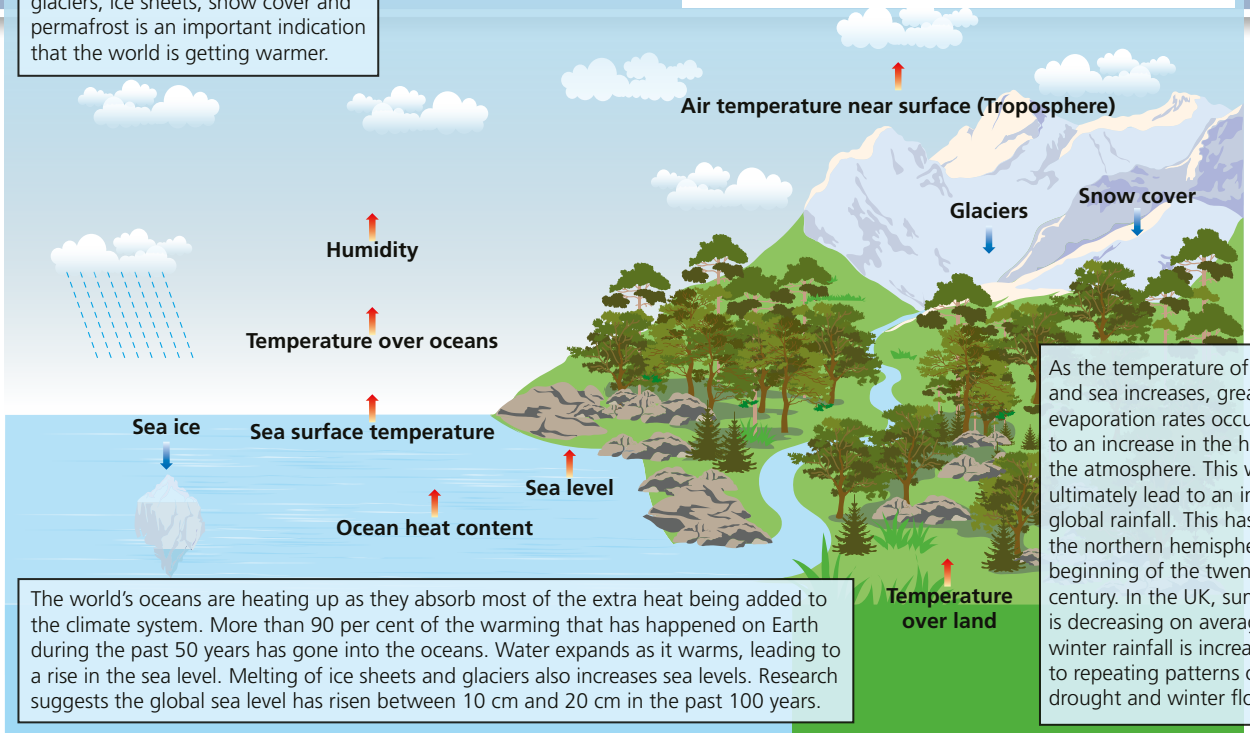
a) Write three sentences to describe how they are created.

b) Write a paragraph to describe how temperatures have changed over the last two centuries.

c) Why do you think the stripes are so effective at showing climate change?

D Ten indicators of a warming world

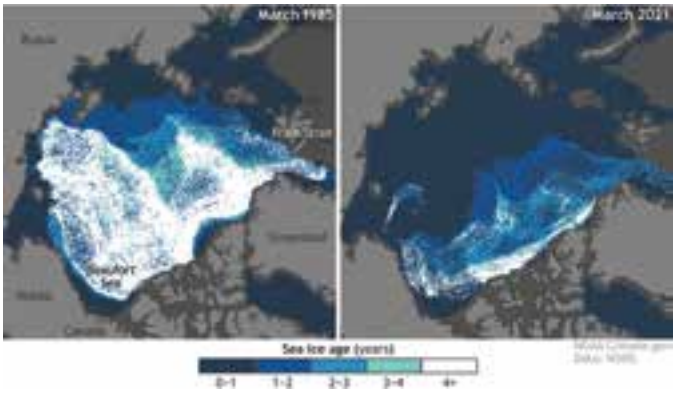
The decreasing size of the world's glaciers, ice sheets, snow cover and permafrost is an important indication that the world is getting warmer.



The world's oceans are heating up as they absorb most of the extra heat being added to the climate system. More than 90 per cent of the warming that has happened on Earth during the past 50 years has gone into the oceans. Water expands as it warms, leading to a rise in the sea level. Melting of ice sheets and glaciers also increases sea levels. Research suggests the global sea level has risen between 10 cm and 20 cm in the past 100 years.

As the temperature of the land and sea increases, greater evaporation rates occur. This leads to an increase in the humidity of the atmosphere. This will ultimately lead to an increase in global rainfall. This has occurred in the northern hemisphere since the beginning of the twentieth century. In the UK, summer rainfall is decreasing on average, while winter rainfall is increasing, leading to repeating patterns of summer drought and winter flooding.

E The extent of Arctic sea ice, 1985 and 2021



The decrease in the world's ice sheets

Arctic sea ice has been declining since the late 1970s, reducing by about 4 per cent, or 0.6 million square kilometres (see Photo E). The Greenland and Antarctic ice sheets, which between them store the majority of the world's fresh water, are both shrinking at an accelerating rate.

3 Look carefully at Graph C.
- **a)** How do you think meteorologists have collected this data?
- **b)** Describe how the global temperature has changed.
- **c)** How does this evidence suggest the climate is now warming more quickly?

4 Look carefully at Diagram D.
- **a)** List the different indicators of climate change in two groups: those that show an increase and those that show a decrease.
- **b)** Write a paragraph to show how the decreased size of glaciers and ice sheets you studied in Lesson 15.9 indicate climate change.
- **c)** Explain why sea levels are rising, and how this is an indicator of climate change.
- **d)** Think back to what you learnt in Unit 4. Explain why an increase in global temperatures is leading to an increase in rainfall around the world.

5 Look carefully at the satellite images in E.
- **a)** How has the use of satellites helped scientists better understand changes that are occurring on the planet?
- **b)** Write a paragraph describing how the Arctic Sea is changing.
- **c)** Look back at Lessons 6.8 and 6.9. How is climate change leading to economic advantages for Russia?

6 Having investigated the scientific evidence this lesson, do you think climate change is happening? Justify your answer.

Student's Book pages 98–99

Campaigns for reducing ocean plastic

Environmental campaigns to reduce ocean plastic take many forms. Individuals may speak out about specific issues that are damaging or small groups or businesses may take positive actions to reduce or replace plastic use. These campaigns attract a huge social following and have important effects locally, nationally or at an international level by influencing the way people, businesses or governmental law makers behave.

1 a) Study the information in the first row of the table about Saltwater Brewery.

Use websites such as 'Reducing Plastic Pollution: Campaigns That Work' (www.campaignsthatwork.org/) to copy and complete the table on a piece of A4 paper with information about James Wakibia's plastic bag campaign in Kenya, the Australian 'Plastic Free July' campaign and another environmental plastic campaign you think is important.

Group/individual	Problem	Solution and impact
Saltwater brewery, Florida wanting to produce ecofriendly beer	Plastic six-pack rings (collars) were: • damaging turtles and other sea creatures • entering the food chain as microplastics ingested by fish.	Introduced six-pack ring made from brewery waste products (grain). This change: • eliminates one source of plastic waste • means the product can be (safely) ingested by fish • decomposes in the ocean within 2–3 months • composts harmlessly on the beach. The advertising campaign featuring turtles: • had five billion global impressions in 30 days • stimulated people to pressurise international breweries • Heineken and Carlsberg introduced recyclable alternatives.
James Wakibia's plastic bag campaign in Kenya		
The plastic free foundation's 'Plastic Free July' campaign in Australia		

2 After completing your table entries, highlight the campaign(s) conducted by social movement charities that are supported by governments in yellow.

3 a) Which do you consider the most successful of the four campaigns you have researched?

b) Why do you think that the campaign you have named was so successful?

4 Suggest two reasons why campaigns often target one specific single use plastic item, e.g. plastic bags or six-pack rings or plastic bottles.

5.10 Why do we need to understand how the Earth works? Review

1 a) Read the information provided in Table A below about events in the Amazonian rainforest in Brazil. Shade or highlight those likely to have taken place during a forest conservationist government period, like that of President 'Lula', in light green. Shade those that would be associated with a resource exploitation government, like that of President Bolsonaro, in red.

3,300 forest fire alerts in 24 hours	Budgets for forest inspectors slashed	Heavy fines for deforestation
Mining encouraged, regulations relaxed	Surge in cattle ranching	Reforestation measures in place
Satellite monitoring of illegal logging and mining activities increased	Germany and Norway suspend Amazon Fund donations for broken terms of agreement	Food production up with two crops on same land area with sustainable farming loans from the government
Rapid road development	Farmers declare fire day	Amnesty for illegal deforesters

Table A: Events in the Amazonian rainforest

b) Choose one exploitation related event and explain how this damages the Amazon rainforest.

2 Read this statement by the newly elected President Lula in 2022:

> 'There is no planetary security without a protected Amazon. We will do whatever it takes to have zero deforestation and degradations of our biomes.'... 'Today, I am here to say that Brazil is ready to join once again [the] effort to build a healthier sustainable planet.'

a) How does deforestation affect the Amazon region's ability to function as part of the Earth's systems as a carbon sink?

b) Suggest why countries like Germany and Norway may be willing to donate to support pro-sustainability actions in the Amazon rainforest.

3 a) Read the information supplied in the 'Lanternfish fact file'. Using this information, create labelled diagrams showing how lanternfish work in the oceans' carbon sink during daytime and night-time in the boxes provided below.

Lanternfish fact file	Lanternfish daily life
Size: 20–300 mm Estimated biomass: 65% of all fish by mass 1,000–10,000 million metric tonnes Carbon store: more than all the world's forest combined Diet: Zooplankton Eaten by: Whales, dolphins and any bigger deep-sea fish, rays, sharks, tuna, squid Habitat – daytime: 300–1,500 metre below the surface Habitat – night-time: surface	Minute phytoplankton live at the surface because they use sunshine to take CO_2 (fixing carbon in their bodies) from the atmosphere by photosynthesis. Zooplankton eat them. Lanternfish eat zooplankton so migrate to the surface to feed at night. During the day, they migrate deep under the surface to hide from their predators in the dark water, taking this carbon with them. Some are eaten by bigger fish, storing the carbon in their bodies. All deposit carbon rich faeces (poo) which sinks to the bottom, as do the fish when they die.

Daytime	Night-time

b) In the moonlight, lanternfish mistake plastic for plankton and eat it. Plastic builds up in their bodies.

What will happen to the plastic when the lanternfish are eaten by other fish, like tuna?

c) What will happen to the plastic when the tuna is eaten by humans?

4 In 2021, Marija Rompani, director of sustainability for the John Lewis Partnership, said:

> 'It has become the norm to take our own bags when we go food shopping, but we have to have a different mindset when shopping for clothes, beauty and home products.'

Where do most of these shopping bags end up?

5 Using a computer, create a storyboard for a short campaign video to prevent **EITHER** more ocean plastic pollution **OR** further Amazon deforestation.

- You need to make the causes of **your chosen problem** clear for the viewer and explain how humans have changed the Earth's systems.
- Describe the problem's impacts (effects) and the response that is urgently needed.
- Use geographical detail and data to educate the viewer and add pictures to your story board.
- Think and write like a geographer.

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Acknowledgements
p.159 OurWorldInData.org/economic-inequality-by-gender | CC BY; p.198 Richard Rogers, "Cities for a Small Planet", 1997, Faber & Faber; p.324 OurWorldInData Licensed under CC-BY by the author Hannah Ritchie; p.325 RISK TO NATURAL DISASTERS, 19 Oct 2021, Landgeist

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