# OXFORD ATLAS

## FOR AUSTRALIAN SCHOOLS

THIRD EDITION

# OXFORD ATLAS

## FOR AUSTRALIAN SCHOOLS

OXFORD
UNIVERSITY PRESS
AUSTRALIA & NEW ZEALAND

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912



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# Contents by topic

# Contents by map

## Australia



### WESTERN AUSTRALIA



### NORTHERN TERRITORY



### SOUTH AUSTRALIA



### QUEENSLAND



### NEW SOUTH WALES



### AUSTRALIAN CAPITAL TERRITORY



### VICTORIA



### TASMANIA



## World

# Using *Oxford Atlas for Australian Schools*

The *Oxford Atlas for Australian Schools* has been written to meet the requirements of geography syllabuses across Years 7–10. In addition to detailed reference maps of Australia and the world, it offers complete coverage of all geographical skills, concepts and topics included in geography syllabuses around Australia.

The *Oxford Atlas for Australian Schools* offers greater flexibility and support than ever before. Every print atlas comes supported by a comprehensive digital offering known as obook + assess. Information on the key features of *Oxford Atlas for Australian Schools* obook + assess is provided on the next page. Together, the print and digital resources form a complete atlas package.

## Key features

The *Oxford Atlas for Australian Schools* has been organised into four main sections to make finding relevant content simple and convenient. The key features of each section are explained below.

SECTION 1

## Geographical skills and concepts

This section is a comprehensive introduction to all the geographical skills and concepts that underpin the teaching of geographical skills in schools around Australia.

- Navigation tabs on each page help students locate topics in each section easily.
- 'Check your learning' activities accompany each geographical concept and skill, offering students an opportunity to practise new skills and consolidate their understanding.

- Each concept for geographical understanding is defined using student-friendly language.
- Detailed explanations and examples are provided for each concept. Student understanding is supported by a wide range of visual sources including maps, graphs, technical drawings, infographics, tables and photographs.

SECTION 2

## Geographical knowledge and understanding

This section offers 136 pages of topics and case studies for students in Years 7–10. These topics are clearly organised by year level and unit to offer depth and full coverage.

- All topics are linked directly to key content descriptions from geography syllabuses in all Australian states and territories.
- A wide variety of graphs are used to convey geographical data in interesting and engaging ways.

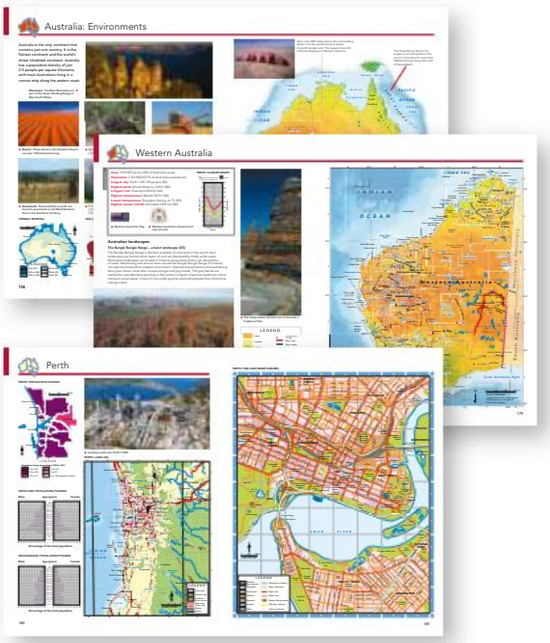
- NASA satellite imagery provides realistic representations of weather events.
- Cross-sections are provided to help students make connections.
- Locator maps provide context and clarity.
- Before and after satellite imagery illustrates change over time of key geographical events like natural disasters.
- A clear and colourful mapping style, together with detailed legend features, support student understanding.

SECTION 3

# Australia

This section contains detailed reference maps of all Australian states and territories, including capital cities. Key facts, geographical data and case studies for each region are provided.

- Stunning full-colour photographs engage students and foster a sense of wonder.
- Land cover maps provide a realistic representation of different environments and physical features to support student understanding.
- Smaller supporting maps provide additional information and geographical data such as rainfall, climate, population and agriculture.
- Simple locator maps at the top of each page show the location of each state and territory.



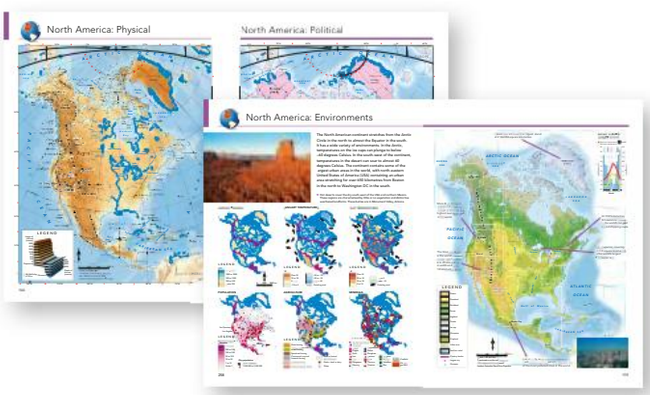

- 'Fast facts' boxes provide up-to-date geographical data and interesting facts at a glance.
- Climate graphs provide updated weather information for each capital city.
- Detailed maps of the CBD and surrounding suburbs are provided for each capital city.
- Population change and land use maps clearly show change over time in each capital city and allow students to identify patterns.
- Population pyramids for key suburbs in each capital city provide opportunities for comparison and discussion.

SECTION 4

# World

This section contains detailed reference maps of all world regions. Case studies, key facts and geographical data are also provided.

- Simple locator maps at the top of each page show the location of each continent or country in relation to others.




- Each continent is supported by three different map types – environments, physical and political – allowing students to identify patterns and make connections between features of the natural environment and the human environment.

## HOW TO FIND WHAT YOU NEED FAST

There are a number of ways you can find the information you are looking for in this atlas:

### 1 Searching for a topic or subject?

If you are searching for a specific topic or subject, use the 'Contents by topic' at the front of the atlas (pages iv–v) or the 'Subject index' at the back of the atlas (pages 332–335).

### 2 Searching for a specific map?

If you are searching for a specific map by world region or type, use the 'Contents by map type' at the front of the atlas (pages v–vi). It lists all of the most significant maps in this atlas and organises them by world region and type so locating them is fast and easy.

### 3 Searching for a specific place or geographical feature?

If you are searching for a specific place (such as a town or city) or geographical feature (such as a lake or volcano), use the 'Gazetteer index' at the back of the atlas (pages 292–331). A gazetteer index is a list or directory of all the places and features that appear in this atlas in alphabetical order. For example, if you are trying to locate the city of Aachen in Germany, search under 'A' in the gazetteer index and you will find the relevant page number, alphanumeric grid reference and coordinates of latitude and longitude:

Aachen **156** **D2** 50°46'N 6°06'E

# Using *Oxford Atlas for Australian Schools* obook + assess

The *Oxford Atlas for Australian Schools* comes supported by a suite of digital resources designed to engage students and support their learning. *Oxford Atlas for Australian Schools obook + assess* is an interactive digital resource compatible with a wide range of devices such as laptops, iPads, Android tablets and interactive whiteboards.

## Key features

The *Oxford Atlas for Australian Schools obook + assess* features all the content of the print atlas, along with a range of engaging digital extras for students and additional support for teachers.


### How to access your obook + assess

- To access your obook + assess, simply go to www.oxforddigital.com.au and follow the on-screen instructions to create an account or log in.
- The first time you activate your account you will need to enter your unique activation code which is printed on page iii of this atlas.
- Once you have activated your obook + assess, it will appear in your bookshelf. Each time you log in you will have full access to the product for the duration of the licence period.

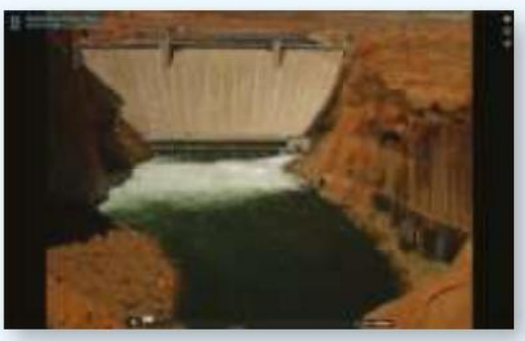
# Digital extras

## Interactive layered maps

Over 250 interactive layered maps can be accessed by clicking on the 'Interactive' icon at the top of maps. Any feature in the legend can then be clicked to turn layers on and off. Add notes, drop pins, coloured shapes or draw freehand on any map.

Once finished modifying the map, students can paste it directly into their assignment or homework task or email it to their teacher.

## Videos from BBC Worldwide Learning

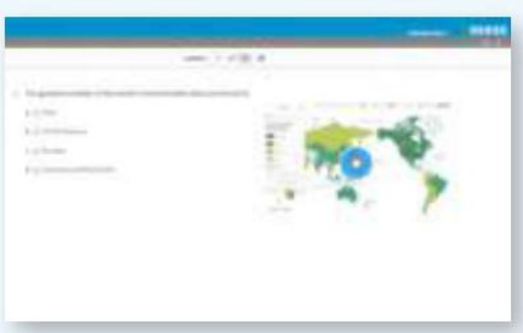


Stunning, professionally-recorded video footage from BBC Worldwide Learning supports many topics and engages even the most reluctant learners. Simply click on the 'Video' icon at the top of selected topics to launch the video player.

## Interactive learning activities

A range of interactive learning activities are linked to many topics. They are designed to appeal to a range of learning styles and provide additional opportunities for students to consolidate and extend their learning. To launch an interactive, simply click on the 'Interactive' icon at the top of selected illustrations and photographs.

## assess



The assess platform provides 24/7 online assessment designed to support student progress and understanding. Students can be assigned a range of graded multiple-choice questions and activities that are auto-corrected to provide instant feedback.

## Statistics database

Compare and map data automatically, or select up to five countries to compare. Once finished, students can graph the results and paste them directly into their assignment or homework task.

Alternatively, students can export data directly to Excel and graph it in any way they choose. To launch the statistics database, click on the 'Statistics database' icon at the top of selected obook pages.

The statistics database allows you to compare geographical data from countries all over the world.

## *Teacher obook + assess*

Teacher support for the *Oxford Atlas for Australian Schools* is provided in digital format. *Teacher obook + assess* allows teachers to assign work electronically to students, set homework, tests and assessment tasks, track student work, and collate or graph the results for reporting and future planning. This comprehensive teacher resource also includes:

- more than 150 pages of student worksheets that can be printed as PDFs or edited in Word to meet the specific needs of your students
- suggested solutions to all student activities in Section 1: Geographical skills and concepts
- a range of lesson ideas, planning tips and assessment advice.




SECTION 1

# Geographical skills and concepts




This section introduces a range of skills used by geographers to understand and explain our world. You will also learn about mapping techniques and conventions that will help you get the most out of your atlas.



This section introduces seven concepts used by geographers to help them observe and understand the natural processes and human activities that shape our planet. These concepts are like lenses that will help you understand our world more clearly.

# Understanding maps

## What is a map?

A map is a simplified plan of an area that uses symbols and colours to represent the features in the real world. Maps are drawn from directly above the area (the plan view). Map makers, known as cartographers, simplify the information from the real world and add additional information such as place names and borders. They use a legend to help unlock the information on the map. Symbols and colours are used in legends to help map readers quickly recognise them – for example, green for parks, blue for water and lines to represent roads.

There are six key features all maps need to contain, known as BOLTSS:

**B**order – to show the extent of the map
**O**rientation – a direction arrow
**L**egend – an explanation of the map symbols
**T**itle – a description of what the map is showing
**S**cale – a way of showing the area represented by the map
**S**ource – the information used to produce the map.

## Different views of the world

To understand and read maps you need to be able to recognise features from the plan view. Maps can only be drawn from the plan view because the scale is the same across the entire area. In the ground view or oblique view, the scale (page 8) changes between the foreground and the background.

### Ground view

This ground view of the Giza pyramids gives an excellent idea of their height and shape. The objects in the background are largely obscured, and the scale varies greatly between the foreground and the background.

▲ Ground view is the view from the ground.

GIZA PYRAMIDS AND SURROUNDS: SATELLITE IMAGE

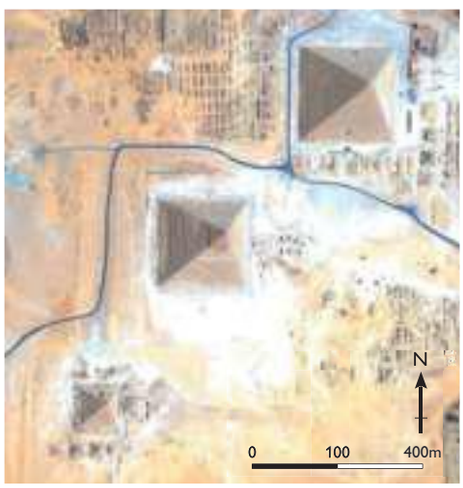
### Oblique view

This oblique aerial photograph of the Giza pyramids gives a good idea of the height and shape of objects. However, some of the background is obscured and the pyramids in the foreground appear larger than they really are. This is because the scale varies between the foreground and the background.

▲ Oblique view is the view from a low, elevated angle.

### Plan view

This satellite image shows the Giza pyramids directly from above. In this plan view it is easy to see the spatial patterns of the structures and their location amongst the roads. Maps are drawn from plan views, as the scale is the same over the entire area.

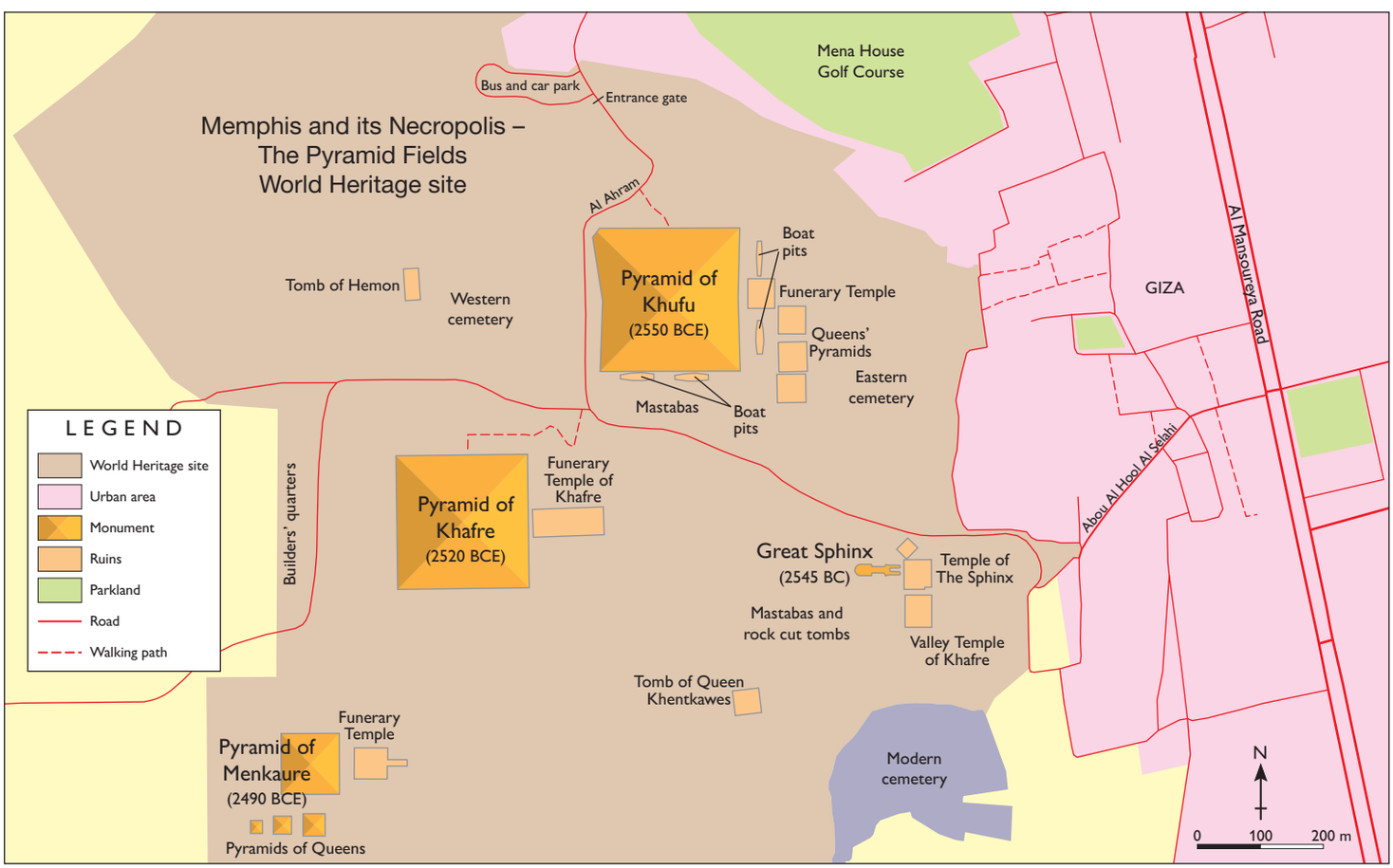



▲ Plan view is the view from directly above an area.

### CHECK YOUR LEARNING

1. What is a map?
2. What six features should a map contain?
3. Study the three views of the Giza pyramids. Can you suggest an advantage and disadvantage of each of these views?
4. Look at the satellite image and map of the Giza pyramids.
   - **a** What features have been labelled on the map?
   - **b** What colour has been selected to show parkland on the map?
   - **c** How are the roads represented on the map?
   - **d** What are the names of the two largest pyramids?
   - **e** What information is shown on the satellite image, but not on the map?
   - **f** What information is shown on the map, but not on the satellite image?

**GIZA PYRAMIDS AND SURROUNDS: WORLD HERITAGE SITE MAP**



# Different types of maps

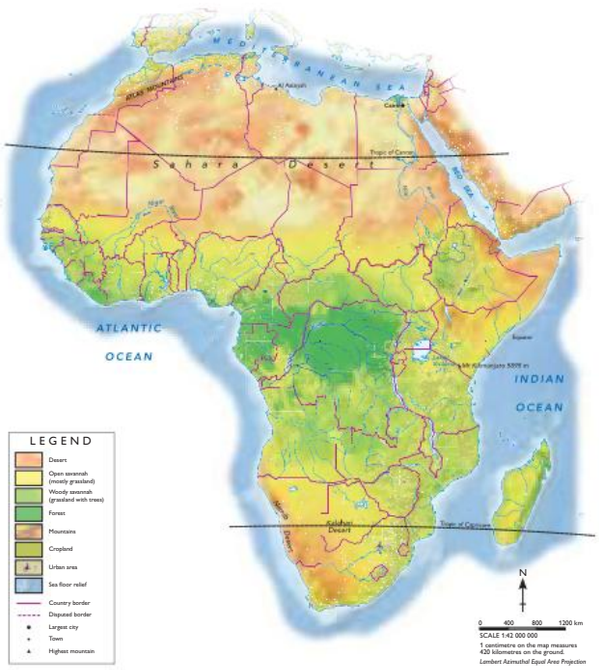
You may come across a range of maps every day, for example, in shopping centres, newspapers and on the Internet. Maps are constructed for many different purposes, but they all display a spatial pattern to help the user. Maps are important in our daily lives and are a critical tool in industries such as mining, building, marketing, transport, tourism and disaster response.

Atlases contain many different types of maps that show a broad range of information. The main types of maps you will find in this atlas are featured here.

## Environment maps

Environment maps show the natural features of the Earth such as land cover, mountains, rivers, deserts, lakes, seas and oceans. They also show urban areas and cropland.

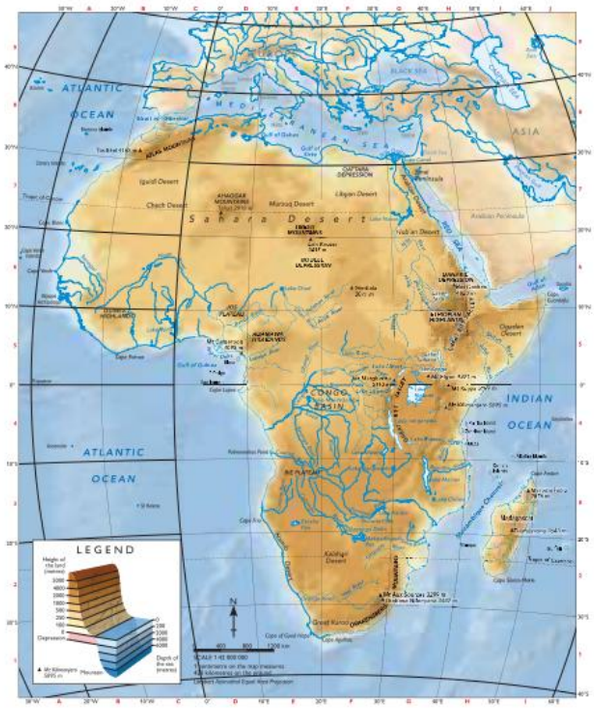
**AFRICA: ENVIRONMENTS**




## Physical maps

Physical maps show the natural features of the Earth such as mountains, rivers, deserts, lakes, seas and oceans. They also show the height of the land and depth of the sea by using different colours.

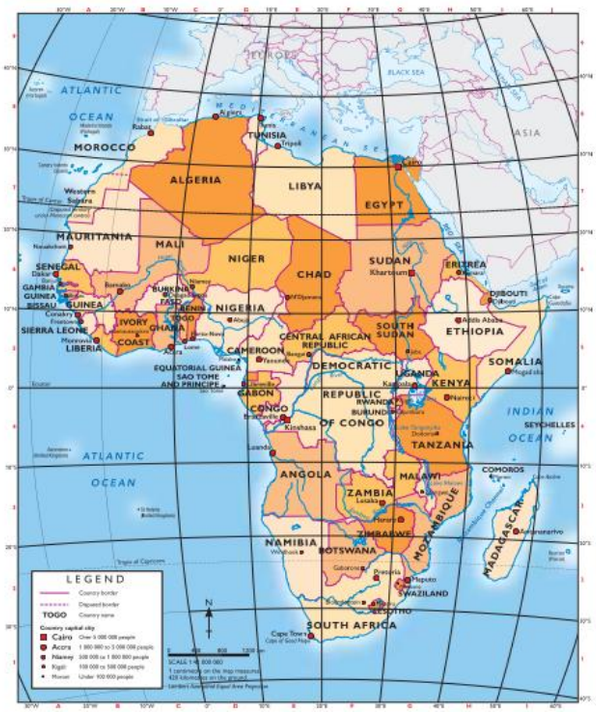
**AFRICA: PHYSICAL**




## Political maps

Political maps show the human features of the Earth such as country, state and territory borders, cities and towns.

**AFRICA: POLITICAL**




### CHECK YOUR LEARNING

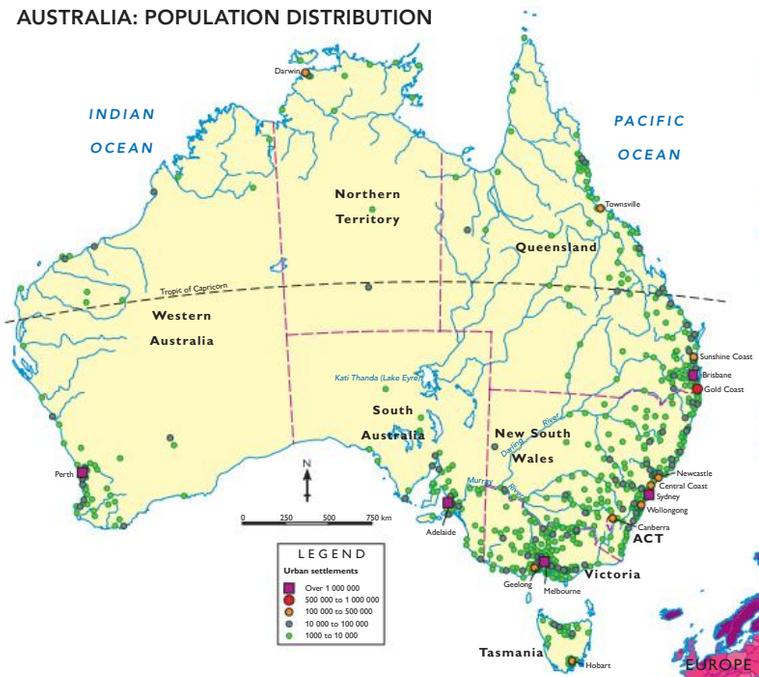
1. What types of maps do you use most often?
2. Make a list of the maps you have seen in the last week and identify where you saw them.
3. Turn to page 223.
   - **a** What type of map is this map of Asia?
   - **b** What information does it provide about Asia?
4. Turn to page 225.
   - **a** What type of map is this map of Asia?
   - **b** What information does it provide about Asia?
5. Look at the Australia population distribution map on the page opposite. Where do most Australians live?
6. How do choropleth maps give a quick impression of a pattern?
7. Find another choropleth map in the atlas.
8. Look at the world tourist flows map on the page opposite. Where are the busiest tourist flows?

## Dot distribution maps

Dot distribution maps use dots (or shapes) to represent a single feature. The dots show the location of the chosen feature, and the size and colour of the dots can show different characteristics of that feature. When combined on a map, the dots form a spatial pattern.

On this population distribution map, small towns are shown as a small green dot and large towns are shown as large red squares.

**AUSTRALIA: POPULATION DISTRIBUTION**




## Choropleth maps

Choropleth maps use different shades of the same colour to give a quick impression of the pattern formed by the data being shown. Darker shades show the highest values while lighter shades show the lowest values or least amounts. This choropleth map shows that Australia is one of the highest energy-using countries in the world.

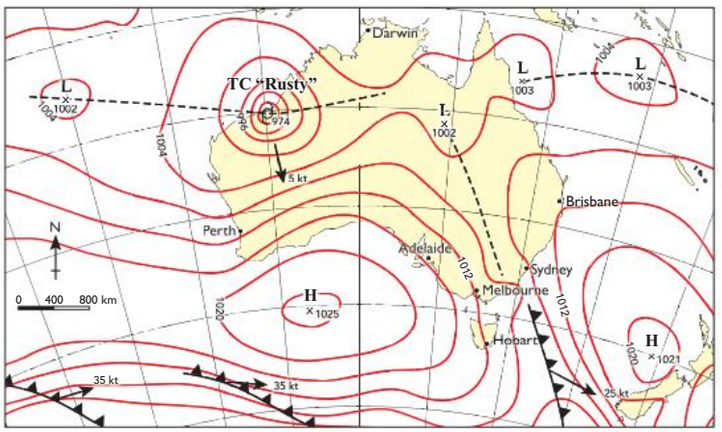
## Flow maps

Flow maps show movement from one place to another. These maps are useful for showing the movement of goods, migration of people and animals, and transport and communications. Often the number of people or goods is shown by using lines of different widths or colours. This flow map shows tourist flows around the world.

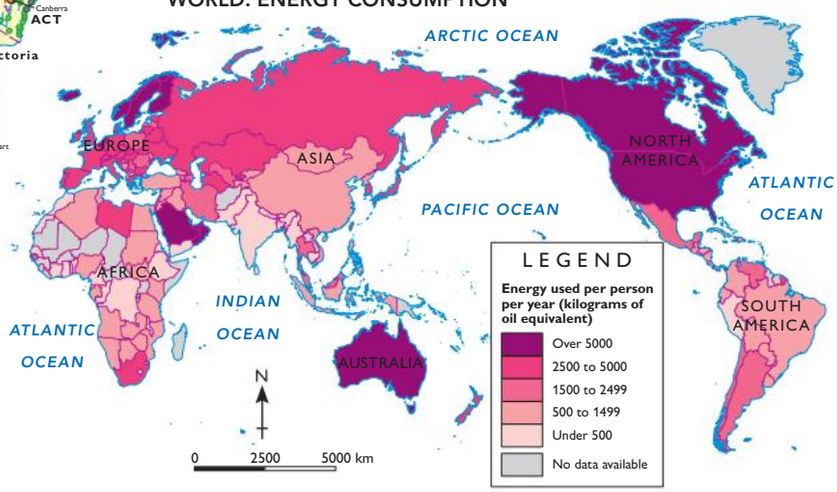
## Weather maps

Weather maps (or synoptic charts) show conditions in the atmosphere such as air pressure, wind speed and wind direction. They also show the size and location of warm and cold fronts. They are most commonly seen on television news.

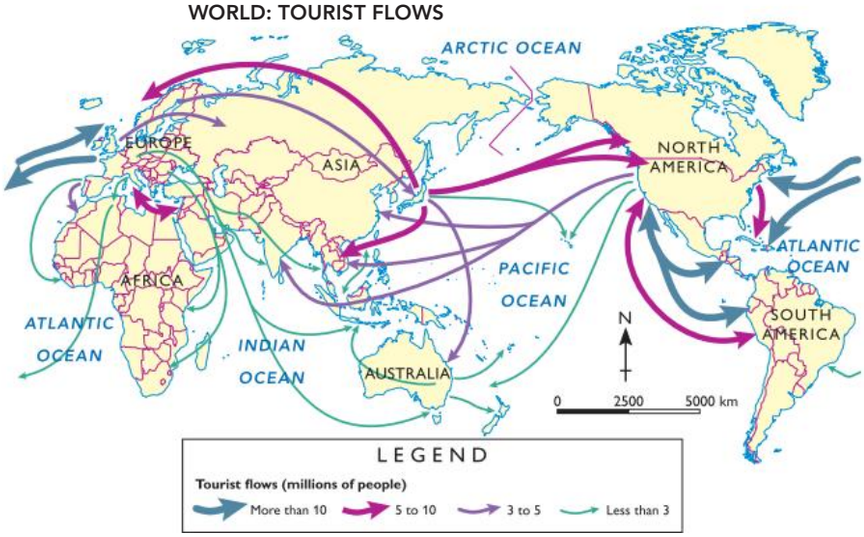
**AUSTRALIA: WEATHER MAP**




**WORLD: ENERGY CONSUMPTION**




**WORLD: TOURIST FLOWS**



# Using direction

## Using a magnetic compass

The four main directions on a compass are north, south, east and west. These are referred to as cardinal points. The other points on the compass are divisions between these four cardinal points, for example, south-west. These are called sub-cardinal points.

No matter where you are on Earth, when you hold a magnetic compass in your hand it will point towards the Magnetic North Pole. Once the location of north is established, you can find the other points of the compass. Using compass points is an accurate method of finding a location because whichever direction you are facing, the compass directions always remain the same.


▲ A compass is an instrument that shows the direction of magnetic north.

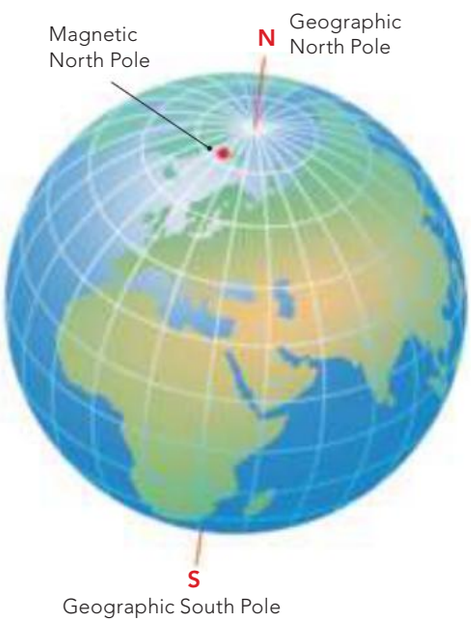
| CODE | DIRECTION |
|---|---|
| N | North |
| NNE | North-north-east |
| NE | North-east |
| ENE | East-north-east |
| E | East |
| ESE | East-south-east |
| SE | South-east |
| SSE | South-south-east |
| S | South |
| SSW | South-south-west |
| SW | South-west |
| WSW | West-south-west |
| W | West |
| WNW | West-north-west |
| NW | North-west |
| NNW | North-north-west |

## True north and magnetic north

True north is the actual direction of the Earth's geographic North Pole. Direction indicators on maps point to the geographic North and South poles, the furthest points north and south of the Equator.

Magnetic north is the direction in which a free-swinging magnet, like a compass needle, will always point. The changing position of the magnetic poles is thought to be due to the Earth's rotation and the movement of minerals within the Earth's mantle.

### GEOGRAPHIC AND MAGNETIC NORTH POLE




### ARCTIC: MOVEMENT OF THE MAGNETIC NORTH POLE

## Bearings

An even more precise way to give directions is to use compass bearings. A compass is a circle made up of 360 degrees (360°). A bearing is an angle that is measured clockwise from 0° or north. We can use a protractor to work out compass bearings on maps. For example, Newcastle lies on a bearing of 160° from Tamworth.

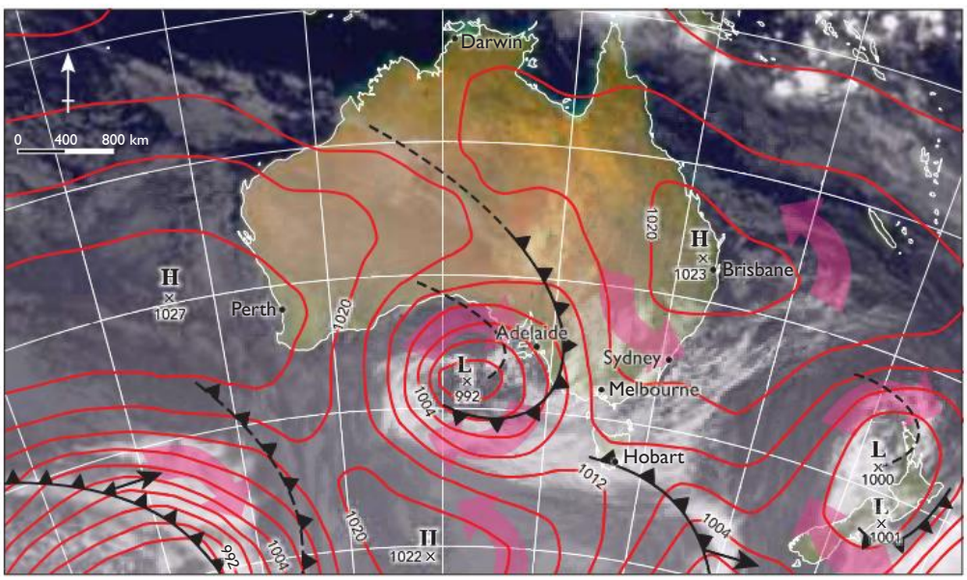
| DIRECTION | BEARING |
|---|---|
| North | 0°/360° |
| North-east | 45° |
| East | 90° |
| South-east | 135° |
| South | 180° |
| South-west | 225° |
| West | 270° |
| North-west | 315° |

NEW SOUTH WALES


## Wind direction

When referring to wind direction, we talk about where the wind is blowing from. A northerly wind blows from the north towards the south. You can determine the wind direction on a weather map if you remember that in the southern hemisphere air circulates in an anticlockwise direction out of a high pressure system and in a clockwise direction into a low pressure system. Fire authorities need to understand wind direction and wind changes to protect people and properties from bushfires.

AUSTRALIA: WIND MOVEMENT




### CHECK YOUR LEARNING

1 'Never Eat Soggy Weetbix' is a phrase we can use to remember the four main points of the compass. What do the letters N, E, S and W stand for?

2 Which compass point lies halfway between:
- **a** west and north-west?
- **b** south and south-west?
- **c** north and east?

3 Look at the Australia map on page 177. In what direction would you fly from Sydney to reach:
- **a** Perth?
- **b** Melbourne?
- **c** Darwin?

4 Explain why there is more than one north arrow on the Arctic map opposite.

5 Look at the map of New South Wales above to work out the following bearings from Tamworth.
- **a** Kempsey
- **b** Sydney
- **c** Broken Hill

6 What is the wind direction for each capital city on the weather map above?

7 Air circulation is the opposite in the northern hemisphere. Describe how air moves from a high pressure system to a low pressure system in the northern hemisphere.

# Using scale

We use scale to shrink or increase the size of real-world objects to fit in a space. Every feature on a map must be scaled down or up by the same amount so that the features are the correct size in relation to one another. The pictures opposite show four different pineapples that have been scaled to fit on this page.

The scale tells you the actual size of each pineapple. One unit (say, 1 centimetre) on each image represents a number of units in the real world. For example, the pineapple fruit image has a scale of 1:6. This means that 1 centimetre on the image represents 6 centimetres in the real world. The image of the pineapple fruit is 5 centimetres high, so a real pineapple is 6 x 5 centimetres or 30 centimetres high.


▲ Pineapple fridge magnet, scale: 1:1 ▲ Pineapple fruit, scale 1:6 ▲ The Big Pineapple, scale 1:320 ▲ Pineapple lolly, scale 2:1

## Scale on maps

Scale is a handy device to study the world from the classroom. Features in the world can be shrunk down and represented on maps. For example, we can study a large area such as Tasmania by accurately scaling down each of its main features onto a map. On a map, the scale can be shown in three ways:

**Scale statement** describes the scale in words. For example, 1 centimetre on the map represents 30 kilometres on the ground.

**Line scale** acts like a ruler against which you measure distances on a map. On the line scale opposite, 1 centimetre represents 30 kilometres.

**Representative fraction** shows that one unit (say, 1 centimetre) on a map represents a number of units in the real world. For example, 1:3000000 means that 1 centimetre on the map represents 3000000 centimetres (or 30 kilometres) on the ground.


## Using the line scale to measure distances

The easiest way to calculate actual distance between two points on a map is to use the line scale.

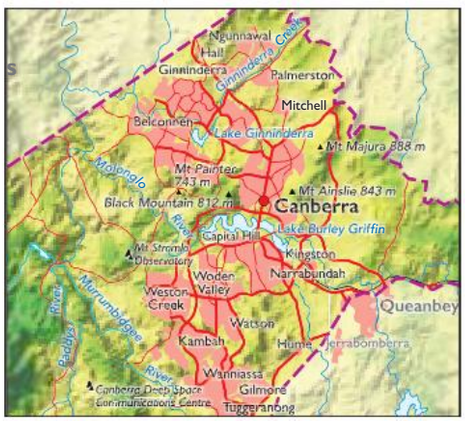
1. Place the straight edge of a sheet of paper or shape a piece of string along a distance to be measured.
2. Mark the starting and finishing points.
3. Hold the edge of the paper or straighten the string against the line scale to work out the real distance between the points.

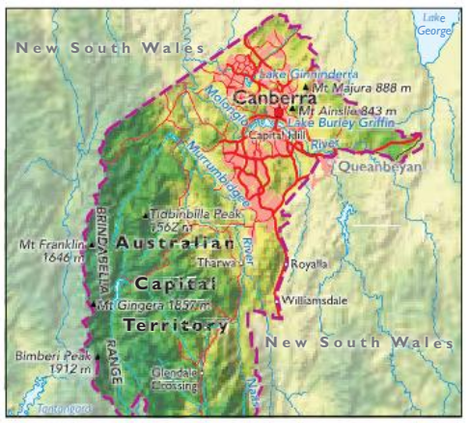
▲ Measuring straight distances with paper

▲ Measuring curved distances with string

## Comparing map scales

Maps in this atlas are shown at the largest possible scale to show as much detail as possible.





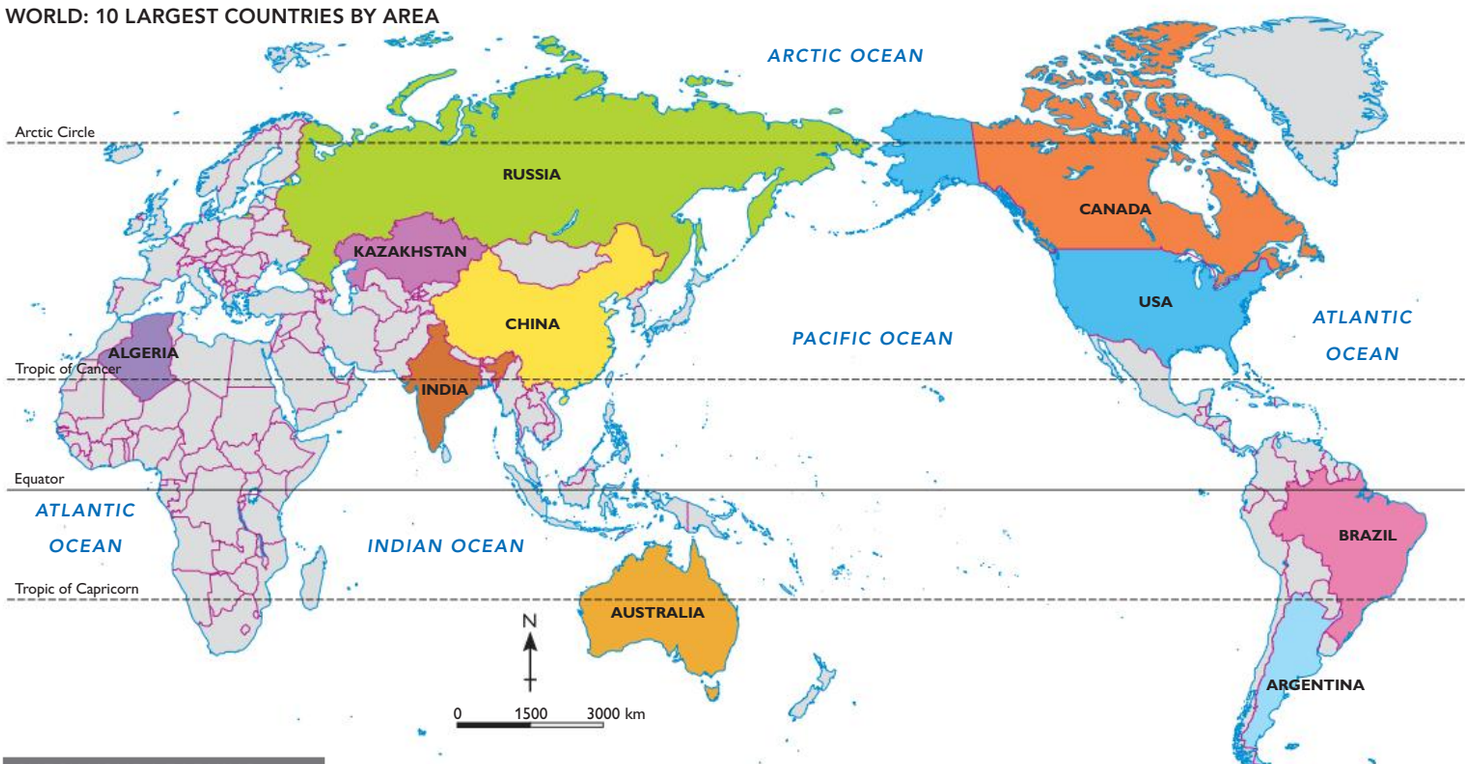
▲ Large-scale maps show detailed information about an area.

▲ Small-scale maps show basic information about an area.

## Comparing country size

Countries in this atlas are shown at a range of different scales. When comparing the size of countries by area, make sure they are at the same scale.

**WORLD: 10 LARGEST COUNTRIES BY AREA**




### CHECK YOUR LEARNING

1 Which of the four pineapples is shown at its actual size? How can you tell?

2 How high is the real Big Pineapple?

3 How high is a real pineapple lolly?

4 Look carefully at the map of Tasmania.

- **a** Explain the scale of the map in words.
- **b** Estimate the straight-line distance from Hobart to Launceston.
- **c** Use a length of string or cotton to measure the distance by road between Hobart and Launceston.

5 Is a street map a large- or small-scale map?

6 Approximately how many times larger than Australia is the world's largest country?

# Using location

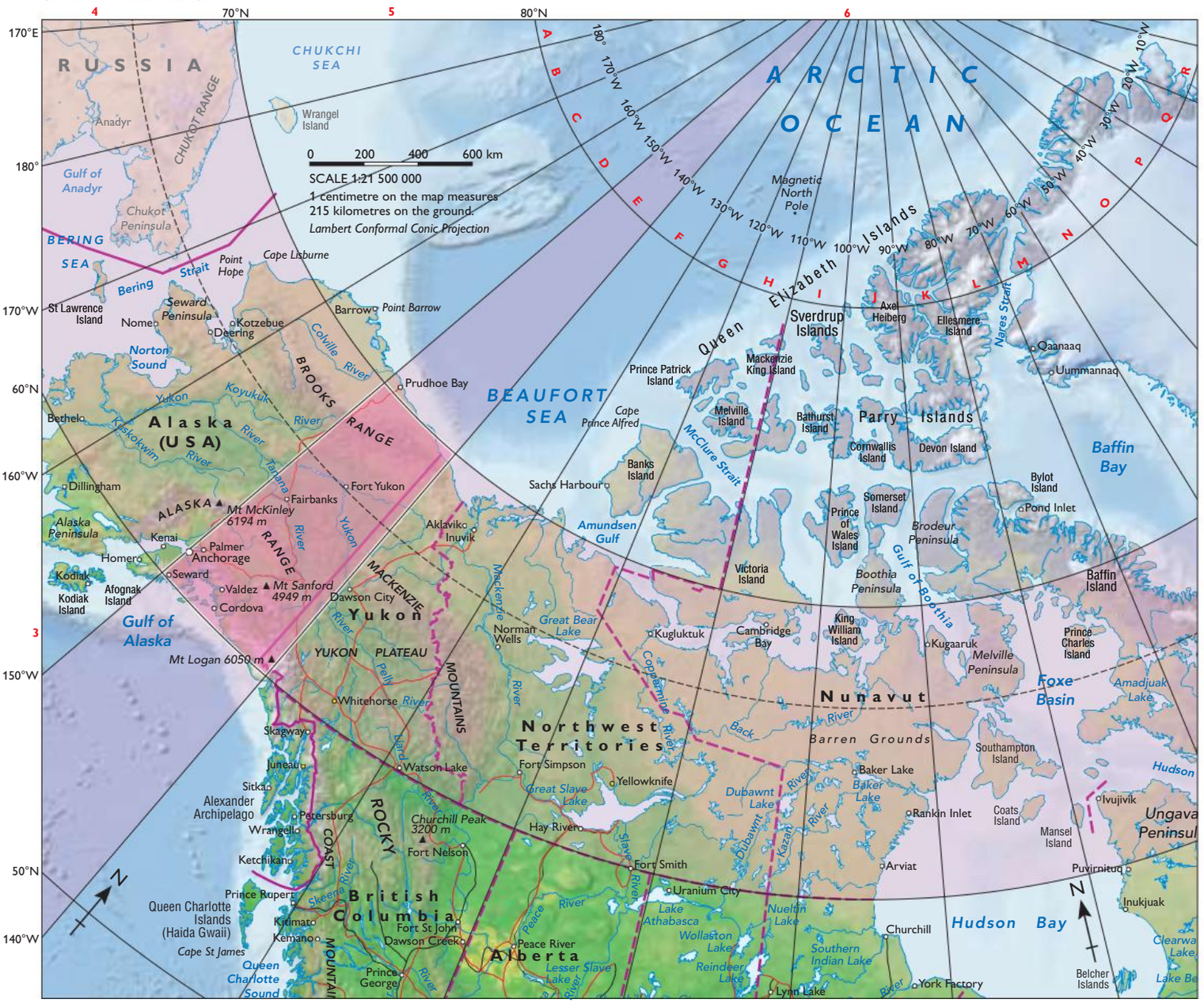
## Alphanumeric grid references

Maps, such as those found in shopping centres, street directories and atlases, are overlaid with a grid to make it easier to find features. The space between grid lines is given a letter (along the top and bottom of the map) and a number (along the sides). This type of grid is called an alphanumeric grid.

The grid reference is found where the lettered column meets the numbered row. For example, on the aerial photograph (right), the leader of the herd of elephants is located at E3.

Atlas maps use the curved lines of latitude and longitude as the grid lines. When reading grid references on atlas maps be sure to follow the curve of the grids and stay inside the grid lines. For example, on the map of Canada and Alaska (below), the grid reference for Anchorage is E4.

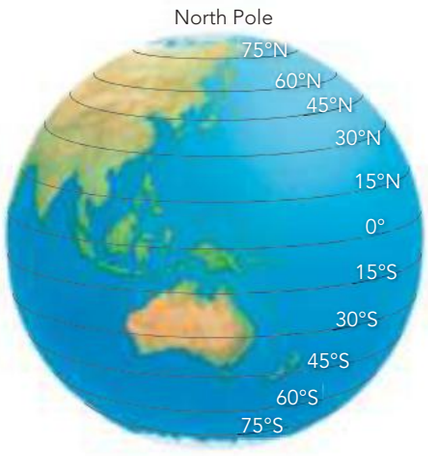

CANADA AND ALASKA



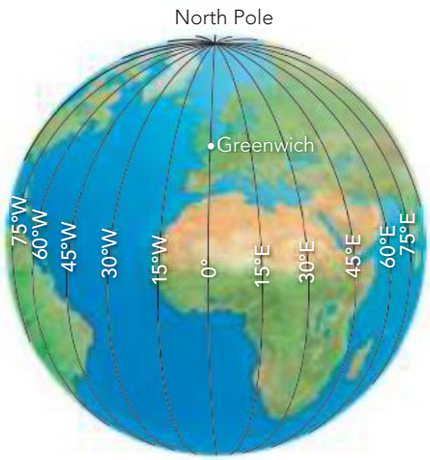
## Latitude and longitude

Latitude and longitude form a grid of imaginary lines that cover the globe. They help us accurately locate places. Lines that run from east to west are referred to as latitude and lines that run from north to south are called longitude.

The line of latitude midway between the poles is known as the Equator. The Equator divides the Earth into the northern and southern hemispheres. Lines (or parallels) of latitude are measured in degrees north and south of the Equator. The Prime Meridian (0 degrees longitude) runs through Greenwich in England. Lines (or meridians) of longitude are measured in degrees east and west of the Prime Meridian. Each degree is further divided into 60 minutes to make measurement even more accurate.




▲ Lines (or parallels) of latitude




▲ Lines (or meridians) of longitude

## Finding locations using latitude and longitude

In the atlas index the location of Abidjan in the Ivory Coast is given as 5°19′N, 4°01′W. The letter N means that Abidjan is north of the Equator and the letter W means that it is west of the Prime Meridian. Latitude 5°19′N means that Abidjan is 5 degrees, 19 minutes north of the Equator. Longitude 4°01′W means that Abidjan is 4 degrees, 1 minute west of the Prime Meridian.

**NORTHERN AFRICA**


### CHECK YOUR LEARNING

1 Give the alphanumeric grid reference for the following elephants shown on the page opposite:
   - **a** the smallest elephant
   - **b** the most southerly elephant.

2 How many elephants are found at A2 and C3?

3 Look carefully at the map of Canada and Alaska opposite. Give grid references for the following cities:
   - **a** Baker Lake in the province of Nunavut
   - **b** Uummannaq, between 70° and 80° north of the Equator.

4 Which imaginary lines meet – latitude or longitude? Where do they meet?

5 Name these capital cities (shown by a red symbol) on the map of Northern Africa:
   - **a** 5°33′N, 0°15′W
   - **b** 12°40′N, 7°59′W

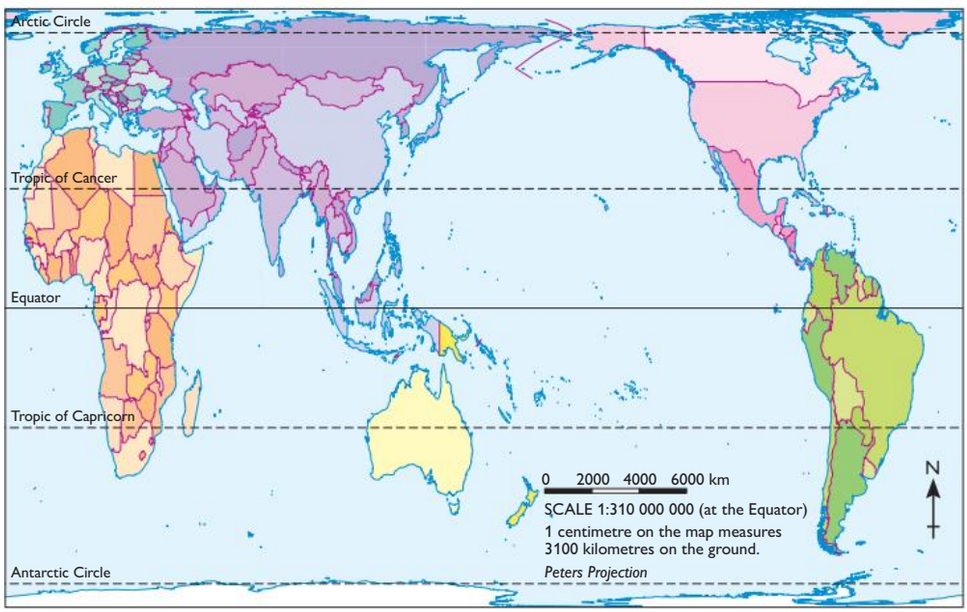
6 On the map of Northern Africa, estimate the latitude and longitude for:
   - **a** Dori in Burkina Faso
   - **b** Greenville in Liberia
   - **c** Sikasso in Mali.

# Map projections and time zones

## Map projections

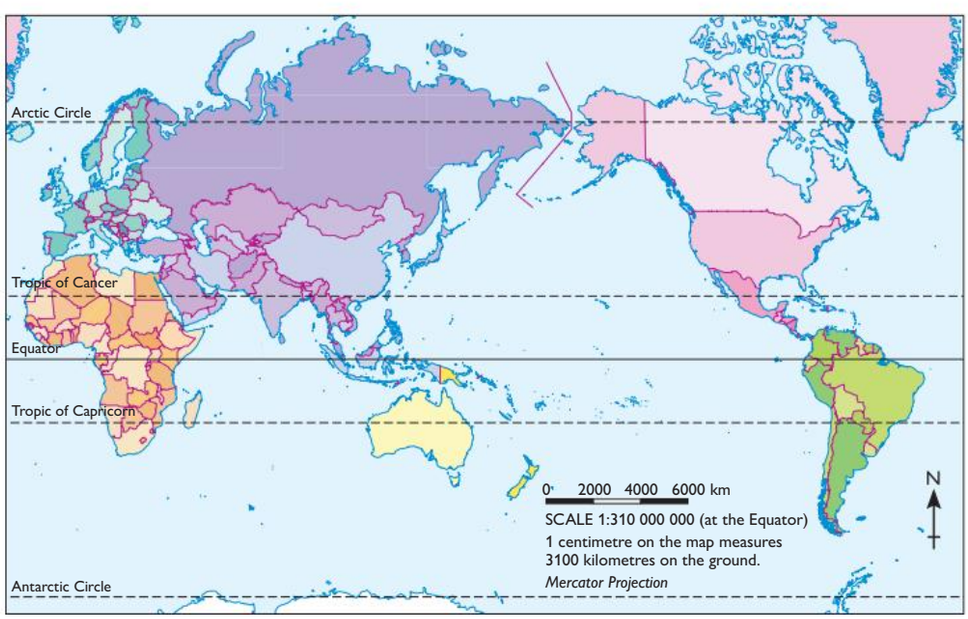
Flat maps can never accurately represent the curved surface of the Earth. The continents on a globe become squashed or stretched as they are projected onto a flat piece of paper. Cartographers use different map projections to show different views of the world. The Peters and the Mercator map projections below are both cylindrical projections.

WORLD: POLITICAL



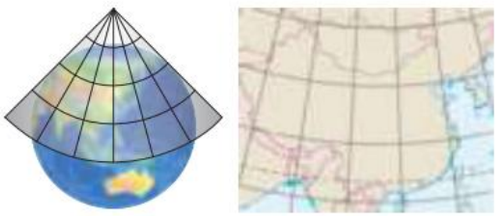

▲ This map is a Peters Projection, where the area is correct and the shape is incorrect.

WORLD: POLITICAL

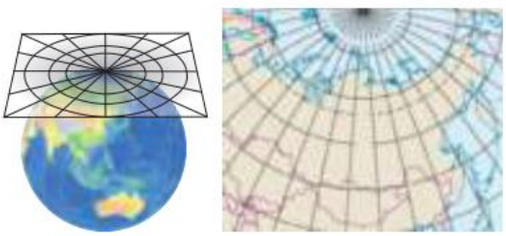



▲ This is a Mercator Projection, where the shape is correct but the area is incorrect.

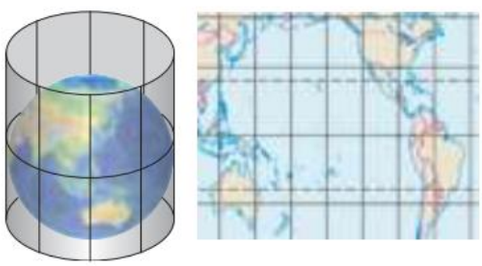
MAP PROJECTIONS



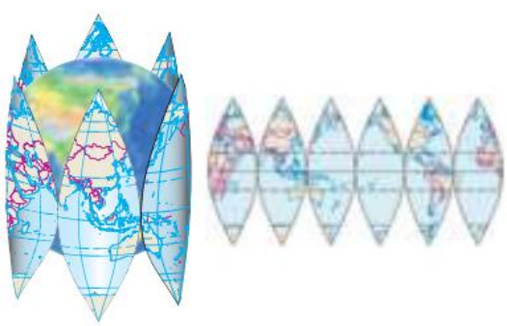
▲ Conical projection: the globe is projected onto a cone and unfurled to make a flat map.



▲ Azimuthal projection: the globe is projected onto a flat piece of paper that touches the globe at only one point.



▲ Cylindrical projection: the globe is projected onto a cylinder and unfurled to make a flat map.



▲ Interrupted projection: the globe is peeled like an orange and opened up to form a map.

## Using longitude to measure time

The Earth completes one rotation (360 degrees) every 24 hours (or 15 degrees each hour). The Earth has been divided into 24 time zones based on each 15 degrees of longitude (sometimes boundaries vary to line up with state or country borders). When the Sun is directly over the Prime Meridian (0 degrees longitude), the time is 12 noon Coordinated Universal Time (UTC). At the same time it is 10 pm in Sydney.

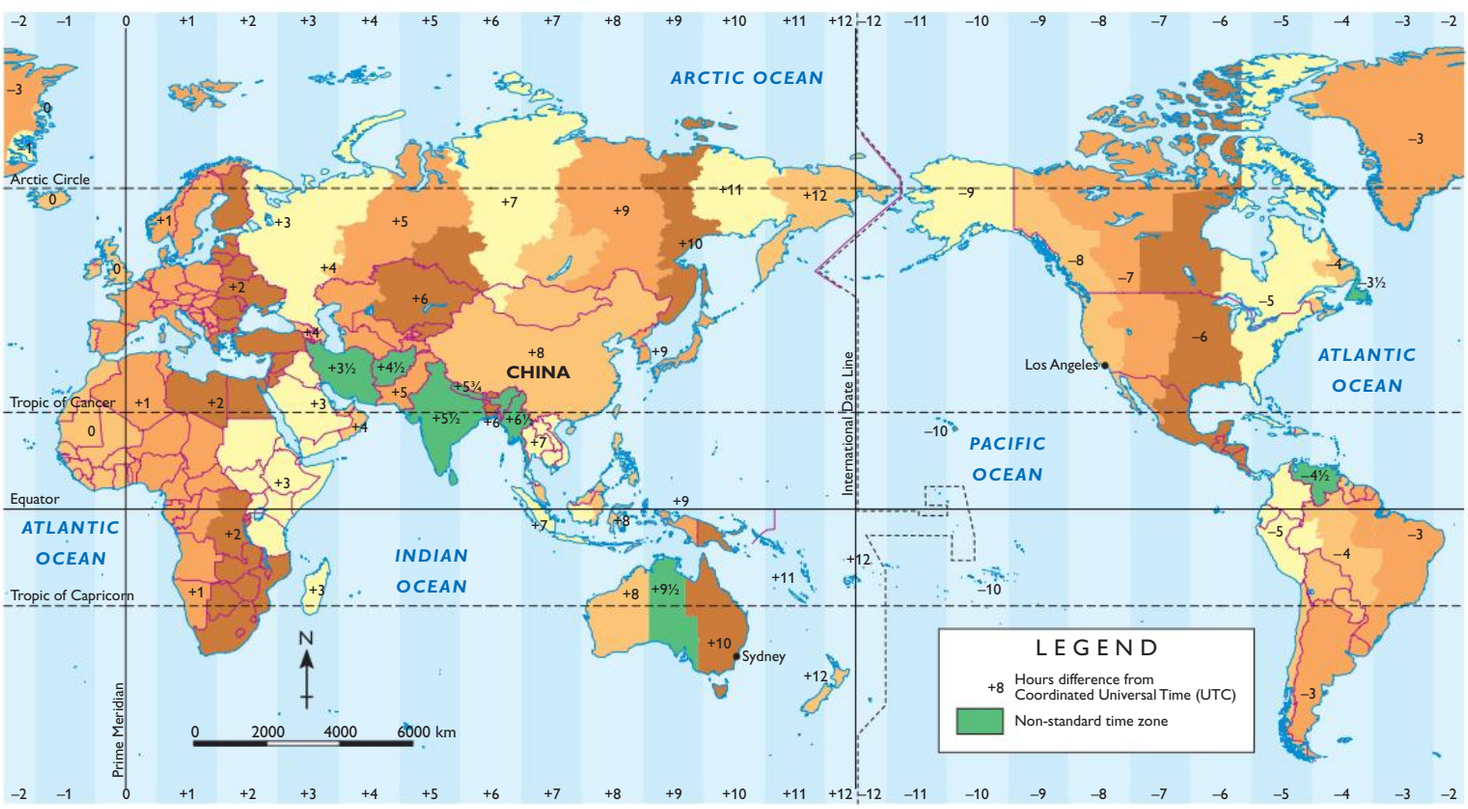
The International Date Line is the line of longitude at 180 degrees east and west of the Prime Meridian. At this point the date changes by one day. If you are travelling from west to east across the International Date Line, you move to the previous day.

When the Sun is shining on one part of the Earth to create day, the other side of the globe is experiencing night. Each hour the Earth turns 15 degrees, moving some parts of the Earth into daylight and others into darkness.

### CHECK YOUR LEARNING

1. What problems do cartographers come across when they represent the curved surface of the Earth on a flat map?
2. Find three different types of map projections used in the atlas. Provide their names, the map title and the page number.
3. What is the International Date Line?
4. If it is 12 noon at the Prime Meridian, what time is it in:
   - **a** Sydney?
   - **b** Los Angeles?
5. Over how many time zones does China extend? What problems might this cause?

**WORLD: TIME ZONES**



# Interpreting height on maps

## Relief shading

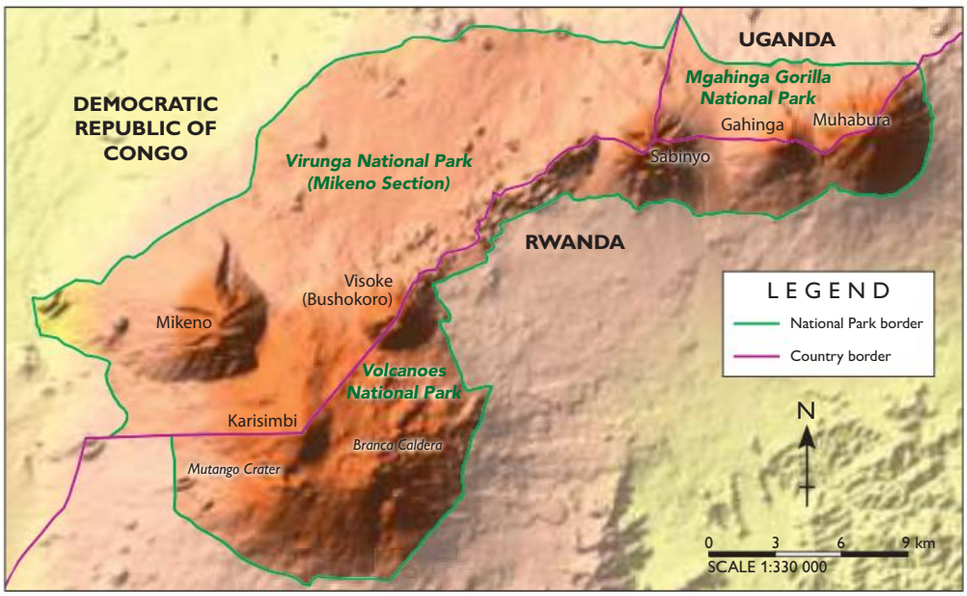
Maps in this atlas use relief shading to show the shape or relief of the land. Relief shading shows the shadows cast by the mountains and hills. Relief shading only gives the map-reader an indication of the shape of the land. Geographers use more accurate methods to show the actual height of the land.

The relief shading helps the reader quickly see the shape and height of the land.

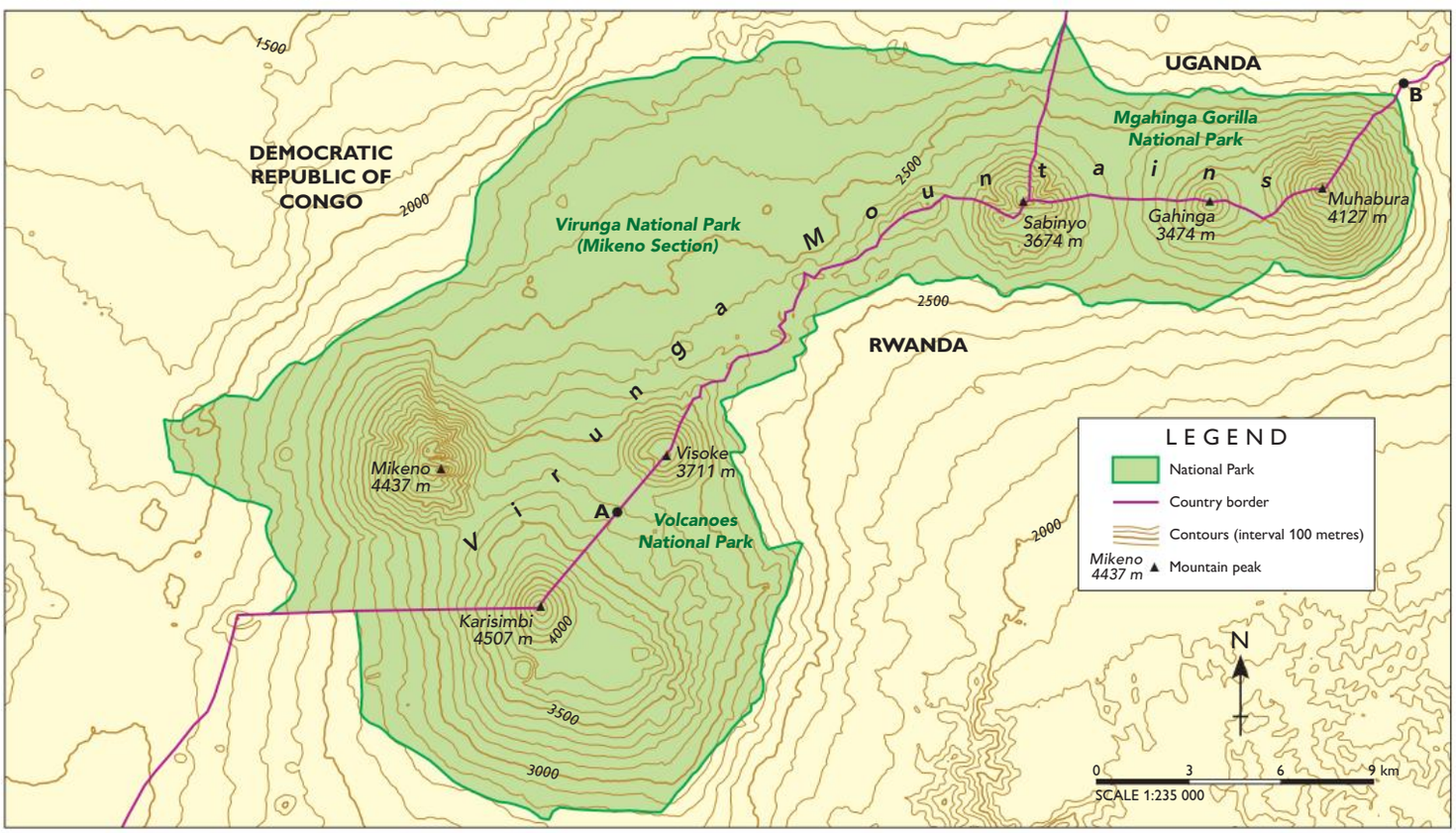
## Contour lines

Contour lines (or isolines) are lines that join together points of equal height above sea level. The height between contour lines is called the contour interval. When contours are close together, this indicates that the land is steep. When they are far apart, this means the land is flatter.

VIRUNGA NATIONAL PARK: RELIEF SHADED MAP



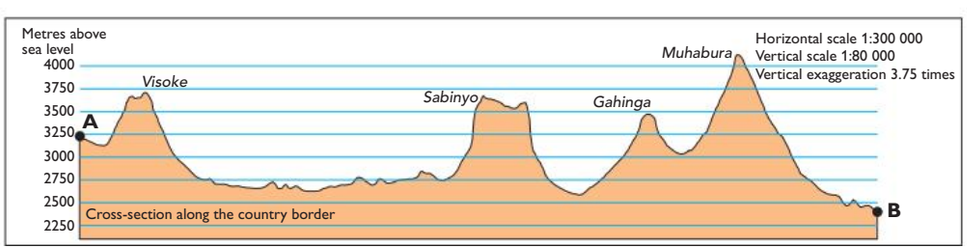

VIRUNGA NATIONAL PARK: TOPOGRAPHIC MAP




## Cross-sections

Cross-sections show the landform as if it were sliced by a knife along the cross-section line. Each point on a cross-section represents where the cross-section line on the map crosses a contour line.

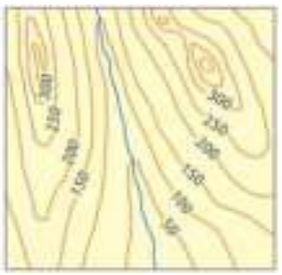
VIRUNGA NATIONAL PARK: CROSS-SECTION



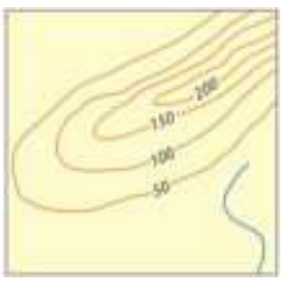
**COMMON CONTOUR PATTERNS**

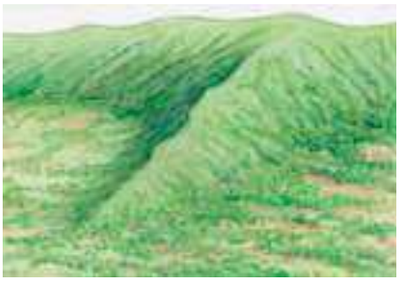
▲ Round hill or volcano

▲ Valley

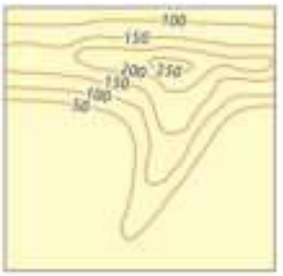


▲ Ridge





▲ Spur

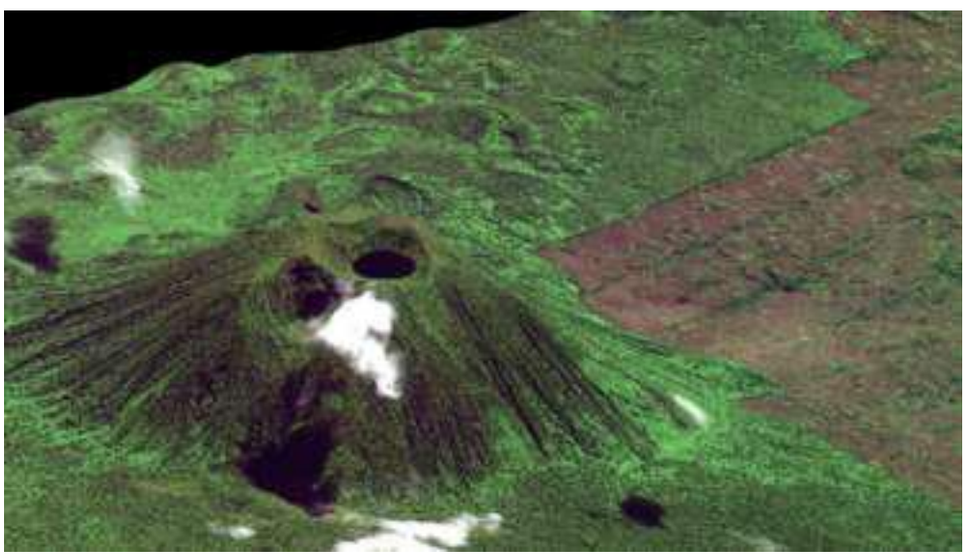


▲ Cliff

▲ Plateau

## Digital elevation models

A digital elevation model (DEM) represents the contour map in three dimensions. Much of the information for DEMs is gathered from satellite data. The information is represented as a raster (a grid of squares) and manipulated to form a model of the Earth's surface. Often satellite images are overlaid on top of the model to make it life-like, such as the Visoke Volcano DEM below.



▲ Digital elevation model of Visoke Volcano, Virunga National Park


### CHECK YOUR LEARNING

1 What is the advantage of using relief shading on maps?

2 Look at the relief shading on the physical map of South America on page 270.
   - **a** Which mountain range stands out using relief shading?
   - **b** How does relief shading help show the Amazon Basin?

3 What is a contour line?

4 Look carefully at the topographic map of Virunga National Park opposite.
   - **a** What is the contour interval used on this map?
   - **b** How high is the Visoke Volcano?
   - **c** What do the close contour lines on Visoke Volcano tell you?
   - **d** If you walked from point A to point B:
     - **i** How far would you walk?
     - **ii** What would be the steepest part of your journey?

# Interpreting topographic maps

## Topographic maps

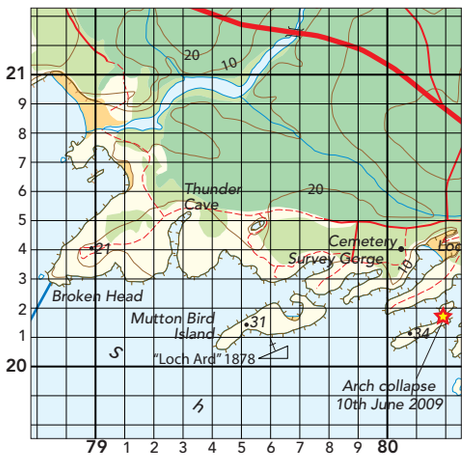
Topographic maps show natural land features like valleys, hills and ridges through the use of contour lines (see page 14). They also show other natural land features such as forests, rivers and lakes, as well as human (or built) land features like towns, roads and mines.

## Area and grid references

Square grids are overlaid onto topographic maps. Each line is given a two-digit number. The lines that run up and down the map are known as eastings (the numbers increase as you move east). The lines that run across the map are known as northings (the numbers increase as you move north).

A four-figure area reference (AR) will locate the bottom left corner of the grid square in which you will find the feature. The eastings are given first, then the northings. For example, on the Port Campbell topographic map Big Grasstree Plain can be found at AR7922.

Six-figure grid references (GR) help locate exact points on a topographic map. A third number is added to the easting and northing contained in the area reference. The third figure in the grid reference represents the number of tenths between two eastings. The sixth figure in the grid reference represents the number of tenths between two northings. For example, on the Port Campbell topographic map the *Loch Ard* shipwreck can be found at GR796200.




### CHECK YOUR LEARNING

1. Find three natural features on the Port Campbell topographic map.
2. What two national parks are shown on the topographic map?
3. Explain in words the scale used on the topographic map.
4. What features would you find at the following grid references?
   - **a** GR836217
   - **b** GR823190
   - **c** GR793205
5. What is the contour interval (see page 14) on the Port Campbell map?
6. When contour lines are close together the land is steeper. Is the land steeper at AR8120 or AR8122?
7. The photograph shows the steep cliff to the south-west of the Great Ocean Road.
   - **a** How is this shown on the topographic map?
   - **b** Why aren't contour lines used to show the change in height here?
8. The force of the sea along the Port Campbell coastline has shaped the soft limestone cliffs into amazing shapes.
   - **a** What evidence on the map suggests that this region is constantly changing?
   - **b** What evidence on the map suggests that this region is popular with tourists?

◀ The oblique aerial view of the Port Campbell coastline shows the cliffs, beaches, stacks and roads that are represented as symbols on the topographic map.

## PORT CAMPBELL NATIONAL PARK: TOPOGRAPHIC MAP


### LEGEND

- Principal road; Bridge
- Secondary road
- Track
- National park boundary
- Marine national park boundary
- Shipwreck; Building/s
- Contour with value (interval 10 metres); Spot height (metres); Cliff
- Vegetation: dense; medium; scattered
- Beach
- Lake/dam; Watercourse

N

Scale 1:25 000

metres 0 250 500 750 1000 metres

# Interpreting satellite images

Satellite images help geographers observe large areas of the Earth's surface. Special cameras in orbiting satellites record variations in the light reflected from features on Earth. This process is known as remote sensing. Sets of data are beamed to stations on Earth, where computers highlight features to be studied by selecting only some of the bands of reflected light. On satellite images, these bands are sometimes represented by false colours to help show spatial patterns more clearly. For example, red may be used to highlight vegetation.

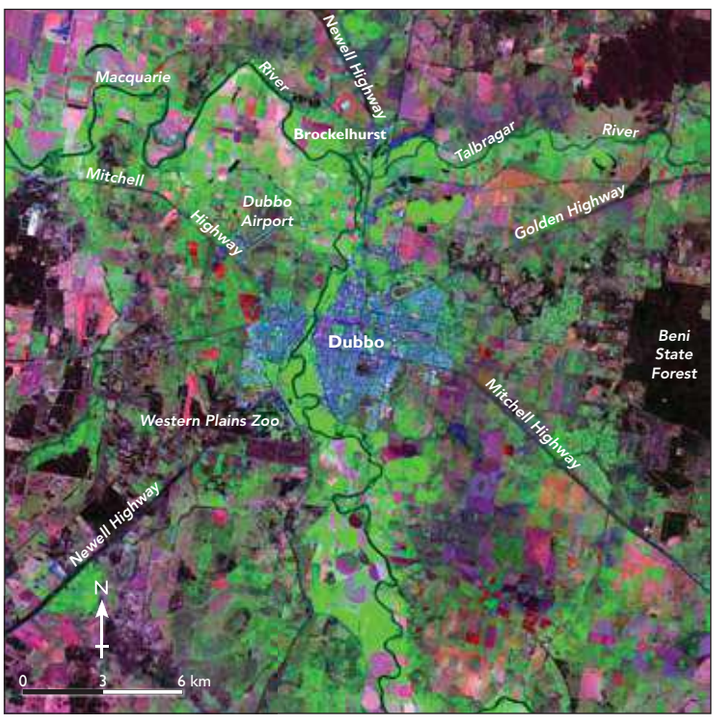
Information from satellite imagery is used to help forecast weather; make decisions in agriculture, mining and warfare; and to predict where aid may be most effectively provided when a natural disaster occurs.

Satellites orbit the Earth at an altitude of around 7000 metres. They provide coverage of the entire globe every 16 days. ►

**DUBBO, 2010: SATELLITE IMAGE**


▲ Natural-colour satellite image of Dubbo, central New South Wales in 2010. In this satellite image, colours appear naturally as they would to the human eye. The urban area and smaller areas of settlement appear grey to white, trees and grasslands as shades of green and yellow, and water as dark blue to black.

**DUBBO, 2010: SATELLITE IMAGE**




▲ False-colour satellite image of Dubbo, central New South Wales in 2010. In this satellite image, the urban area appears as shades of blue and light purple, dry vegetation and soil as dark purple to red, and irrigated crops as shades of green. Forests are very dark green to black and water is dark blue to black.

## CHECK YOUR LEARNING

1 How do geographers use satellite images?
2 Why are false colours used on satellite images?
3 Which of the two satellite images of Dubbo do you find the easiest to understand? Why?
4 What changes took place between June and December 2004 in Banda Aceh? How might relief agencies have used these satellite images?
5 Examine the false-colour satellite image of Buraida on page 46.
   **a** What colour is used to show irrigated fields?
   **b** What colour is used to show land ready for planting?

BANDA ACEH, INDONESIA, 23 JUNE 2004: SATELLITE IMAGE


BANDA ACEH, INDONESIA, 28 DECEMBER 2004: SATELLITE IMAGE


▲ Satellite images are used by relief agencies to survey destruction from natural disasters such as the tsunami that hit Indonesia in December 2004.

# Interpreting graphs

## Bar graphs

Bar graphs show information as a series of bars that run in a horizontal direction and are stacked one on top of the other. They are usually used to compare quantities. This bar graph (right) shows the world's 10 worst disasters. The item being compared is shown on the vertical axis (in this case, the disaster). To identify the number of people killed in each disaster, place a ruler at the end of each bar and read down to the horizontal axis that contains the amount (in this case, the number of deaths).

## Column graphs

Column graphs are similar to bar graphs, but they show information as a set of vertical columns that are arranged side by side. They are also usually used to compare quantities. This column graph (far right) shows the world's urban population by region. The item being compared is shown on the horizontal axis (in this case, regions of the world in four selected years). To identify the percentage of urban population in a region in a particular year, place a ruler at the top of the bar and read across to the vertical axis that contains the amount (in this case, percentage of urban population).

## Compound column graphs

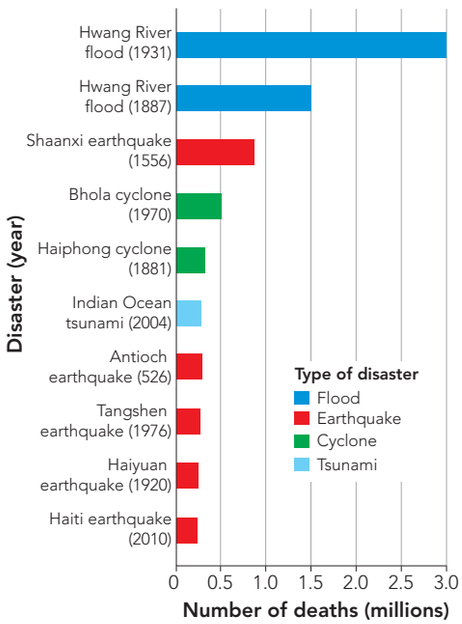
Compound column graphs, like the world population growth graph opposite, are a more complex type of column graph. They show both the item being compared and the parts of the whole. Each column shows the world population at the start of a decade. Each column is then divided into the population of the world's regions. To estimate the population for each region, mark the depth on the edge of a sheet of paper and place it against the vertical scale (from zero).

## Population pyramids

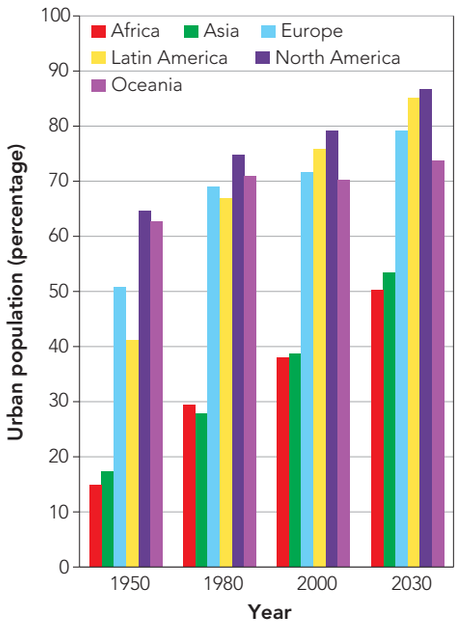
Population pyramids are bar graphs that show the percentage of males and females in different age groups in a population. Population pyramids are organised so that younger age groups are at the bottom and older age groups are at the top. Percentages of males are placed on the left-hand side and percentages of females on the right-hand side.

The population pyramids opposite show how Australia's age and sex structure compares to that of Niger. Developing countries, such as Niger, generally have high birth rates and high death rates that produce a pyramid-shaped graph with a wide base. Developed nations, such as Australia, generally have low birth rates and low death rates that produce a more vase-shaped population pyramid with a small base.

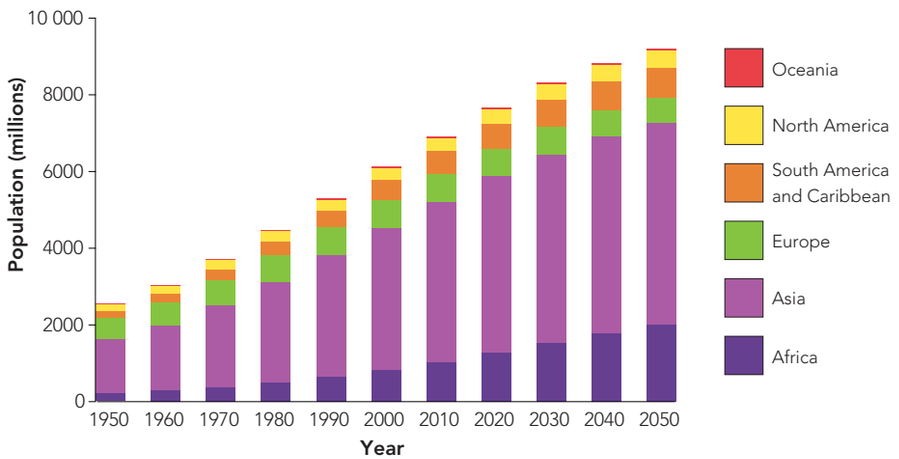
WORLD: 10 WORST DISASTERS



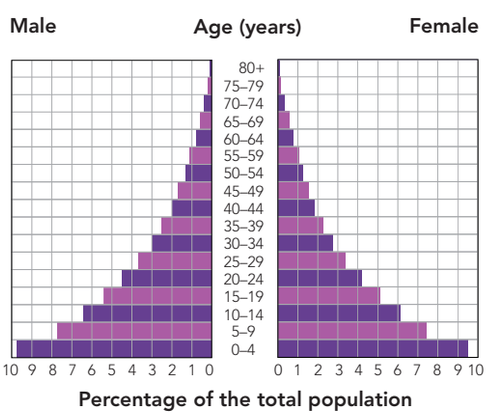

WORLD: URBAN POPULATION BY REGION



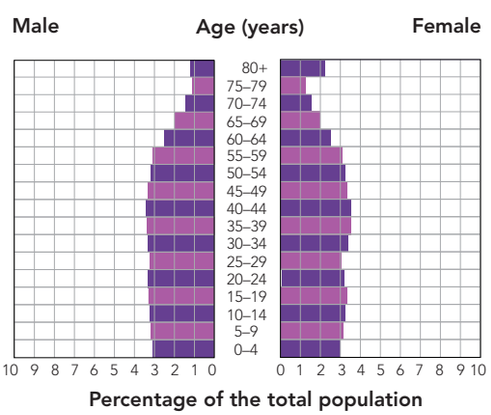

WORLD: POPULATION GROWTH BY REGION




NIGER: POPULATION PYRAMID



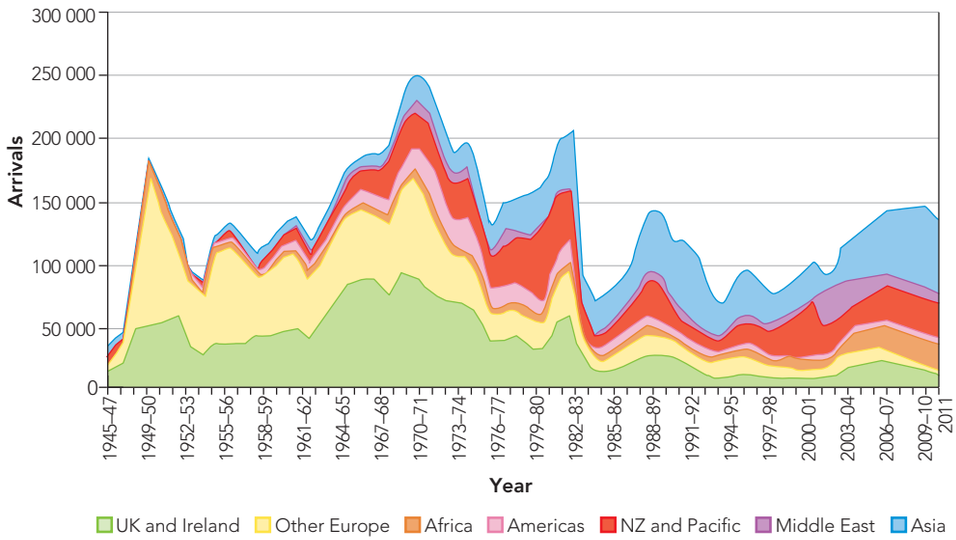

AUSTRALIA: POPULATION PYRAMID



## Line graphs

Line graphs show information as a series of points that are joined up to form a line. The line shows a trend or change over time. The horizontal axis will usually show units of time. In the example of settler arrivals to Australia below, it is years. The vertical axis shows the number of what is being measured – in this case, settler arrivals. This is an example of a compound line graph. As with compound column graphs, to estimate the number of arrivals for each region, mark the depth of each colour on the edge of a sheet of paper and place it against the vertical scale from zero. The number of settler arrivals to Australia in 2011 from Asia was around 60 000, not 140 000.

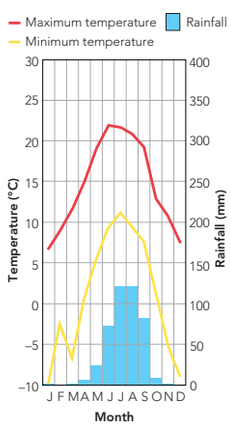
**AUSTRALIA: SETTLER ARRIVALS BY REGION**




## Climate graphs

Climate graphs combine a column graph with line graphs. The line graphs show the maximum and minimum temperatures for each of the twelve months of the year. The temperatures are read from the left vertical axis. The column graph shows the rainfall for each month. The rainfall totals are read from the right vertical axis. This climate graph shows Lhasa has cold, dry winters and cool, wet summers.

**LHASA, CHINA: CLIMATE GRAPH**

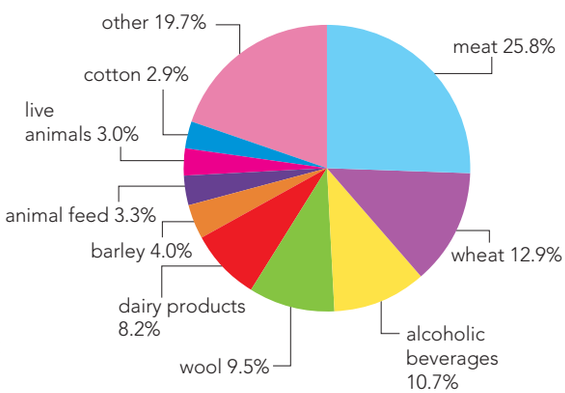



## Pie graphs

Pie graphs are shaped like a circle and are divided up so that the information being shown represents the slices of a pie. The circle of 360 degrees represents the total or 100 per cent of whatever is being graphed – in this case, Australia's agricultural exports.

The slices are represented from the largest to the smallest, beginning from the 12 o'clock position. The largest Australian agricultural export is meat. It makes up 25.8 per cent of all agricultural exports. Multiply this number by 3.6 to give you the number of degrees in the circle – in this case, 92.9 degrees. The 'other' category is always placed last. It is made up of all the parts that are too small to represent clearly on the pie.

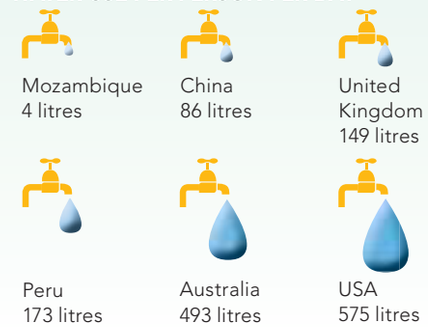
**AUSTRALIA: AGRICULTURAL EXPORTS**




## Picture graphs

The size or number of pictures in a picture graph gives the reader an instant visual pattern.

**SELECTED COUNTRIES: HOUSEHOLD WATER USE PER PERSON PER DAY**




**WORLD: HUNGER STATISTICS**

One in seven people in the world will go hungry tonight.

One in four children in developing countries is underweight.

### CHECK YOUR LEARNING

1. What was the world's worst disaster and how many people were killed?
2. What percentage of the Africa's population lived in urban areas in 1980? How is this predicted to change by 2030?
3. What was the world's population in 2010? How many of these people lived in Asia?
4. Suggest why Niger has a pyramid-shaped age structure.
5. Do males or females live longer in Australia?
6. How many settler arrivals to Australia were there in 2000? How many of these settler arrivals were from New Zealand and the Pacific?
7. What is the highest average maximum temperature in Lhasa and in what month does it occur?
8. What is the highest average monthly rainfall in Lhasa and when does it occur?
9. How many degrees does the barley slice in the pie account for?
10. Draw a picture graph to represent the information in the pie graph.

# Place

Place refers to parts of the Earth's surface that are identified and given meaning by people. Places range in size from a part of a room or garden to a major world region. They can be described by their location, shape, boundaries, features, and environmental and human characteristics. Places play a fundamental role in human life.

The concept of place helps geographers understand the different ways in which places are experienced, understood and valued by people. Some characteristics of places, such as the size and shape of a coral reef, are tangible (meaning they have a physical presence and can be touched). Other characteristics of places, such as the cultural or spiritual importance of a waterfall, are intangible (meaning they have no physical presence and cannot be touched).

**KAKADU NATIONAL PARK: TOURIST MAP**


## Places are identified and defined

Places can range in size and are identified and defined by people according to their location, shape, boundaries, features, and environmental and human characteristics. Places are important to our security, identity and sense of belonging, and they provide us with the services and facilities needed to support and enhance our lives. Kakadu National Park in the Northern Territory is an example of a large place. In fact, Kakadu is Australia's largest national park covering an area of nearly 20 000 square kilometres. The boundaries of the park are defined by a combination of natural features (such as rivers) in the south-west and straight lines drawn by humans in the south-east.

Inside the boundaries of Kakadu National Park there are many smaller places. Some of these are natural places, such as Jim Jim Falls (known as Barrkmalam to the Indigenous peoples of the region). Others are human places, such as the Warradjan Aboriginal Cultural Centre and the Kakadu Crocodile Hotel in Jabiru.

## Places are given meaning by people

Places play an important role in the lives of every person on Earth. The unique environmental and human characteristics of places influence our relationships with people and nature. Our closest relationships are likely to be with people who live in the same place.

Places are often perceived, experienced, understood and valued differently by people. Some characteristics of places are tangible, for example, landforms and people, while others are intangible, for example, scenic quality and cultural importance. Places are given meaning by people in four main ways:

### CHECK YOUR LEARNING

1. Why is the concept of place important in geography? What does it help geographers to do?
2. Why does place play such a central role in the lives of all people on Earth?
3. Think of a place that is very important to you.
   - **a** Create a list of four characteristics that make this place so important. Decide whether each of these characteristics is tangible (able to be touched) or intangible (unable to be touched).
   - **b** Now decide whether each of these four characteristics is an example of cultural, spiritual, aesthetic or economic meaning.
4. How is it that people can attach such different meanings to the same place?
5. Think of a place in your local area that is changing as a result of human intervention. Describe this place and outline the main reasons why this change is taking place.

### Cultural meaning

Cultural meaning that is attached to certain places is based on how important they are to the shared culture of different people.

Kakadu National Park was one of the first places in Australia to be recognised as a UNESCO World Heritage site because of its outstanding cultural meaning and natural value to the people of Australia and the world. This painting of a tall ship at the Nanguluwur rock art site in Kakadu provides valuable cultural and historical evidence of the interaction between Indigenous Australians and early European settlers.

### Spiritual meaning

Spiritual meaning that is attached to places is based on how important they are to the religious or spiritual beliefs of different people.

Many places within Kakadu National Park are considered sacred to Indigenous peoples from the region. These places carry tremendous spiritual meaning. Stories and myths from The Dreaming that are reflected in dances bind people to the land and connect them to their ancestors.

### Aesthetic meaning

Aesthetic meaning that is attached to places is based on how beautiful and unique they look to different people.

Unique and beautiful landscapes are common across Kakadu National Park. They provide people with aesthetic meaning. Being surrounded by landscapes, such as this one of Nourlangie Rock and Anbangbang Billabong, can provide people with a sense of freedom, wellbeing and connection to the Earth.

### Economic meaning

Economic meaning that is attached to places is based on how financially important they are to different people.

Each year, hundreds of thousands of visitors from Australia and around the world visit many sites within Kakadu. The money that these tourists spend supports a wide range of people and industries, from tour operators and hotel staff to park rangers and Indigenous land owners. In this way, places like the Kakadu Crocodile Hotel hold economic meaning for many people.

## Places are always changing

The Earth is dynamic, meaning that it is constantly moving and changing. The characteristics of most places are influenced by a combination of environmental processes (such as earthquakes and floods) and human processes (such as the construction of houses, roads and factories). Some of these changes are very slow, such as the formation of landforms that take place over millions of years. Other changes take place very quickly, such as the flooding of landscapes during the wet season each year. In many places around the world today, these changes are planned and managed by people.

▲ The Ranger Uranium Mine provides a clear example of the way in which places are changed and managed by humans. Here, uranium (used to fuel nuclear power plants) is mined and sold to countries across Asia, Europe and North America. Although the mine is technically separate from Kakadu, it is surrounded by the park on all sides.

# Space

Space refers to the location of different features on the Earth's surface and the ways in which these features are distributed, organised and managed.

The concept of space helps geographers to understand and explain the reasons why natural features (like volcanoes and rainforests) and human features (like cities and roads) are arranged in the ways they are. The concept of space has three key elements:

- location – an understanding of where things are placed on the Earth's surface
- spatial distribution – an understanding of the shapes and patterns that geographical features form on the Earth's surface
- organisation – an understanding of the way in which all spaces on the Earth's surface are organised and managed by humans.

## Location

Location is the first key element of the concept of space. The location of things on the Earth's surface can be described in two main ways, using absolute location or relative location. Absolute location is a unique reference used to give the exact location of a place or geographical feature on the Earth's surface. Absolute location is often given in terms of latitude and longitude. For example, the town of Kalgoorlie in Western Australia is located at 30°45'S (latitude) and 121°28'E (longitude). Relative location is the location of a place or geographical feature on the Earth's surface in relation to another. For example, the town Kalgoorlie in Western Australia is located approximately 600 kilometres north-east of Perth.

## Spatial distribution

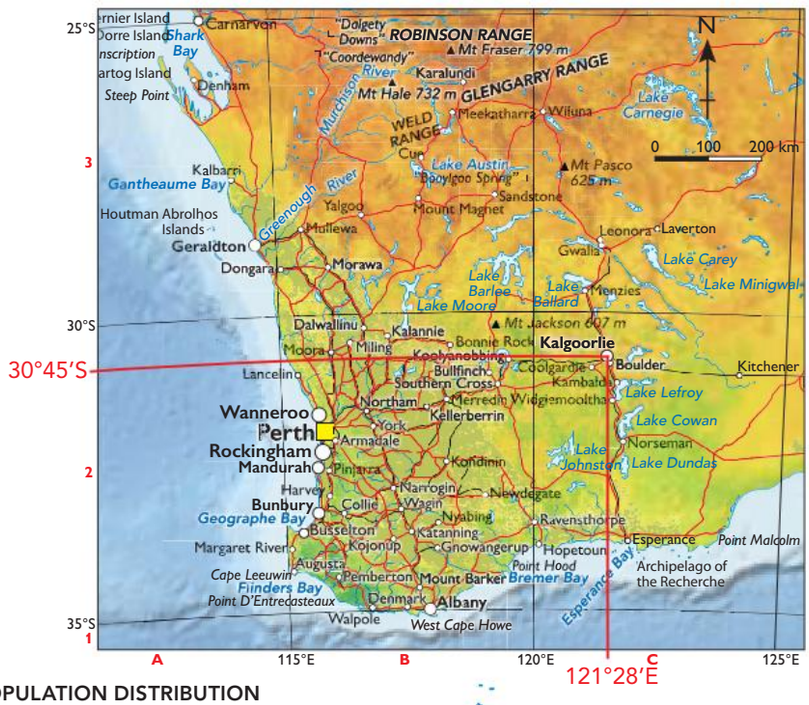
Spatial distribution is the second key element of the concept of space. Spatial distribution refers to the way in which different geographical features (both natural and human) are spread over the Earth's surface. The distribution of these features forms different patterns that can be identified and studied. The most common patterns formed are known as linear, scattered and clustered. For example, on the map of Australia it is possible to see:

- a linear distribution of settlements along the north coast of New South Wales
- a scattered distribution of settlements across inland areas of Queensland
- a clustered distribution of settlements in southern Victoria.

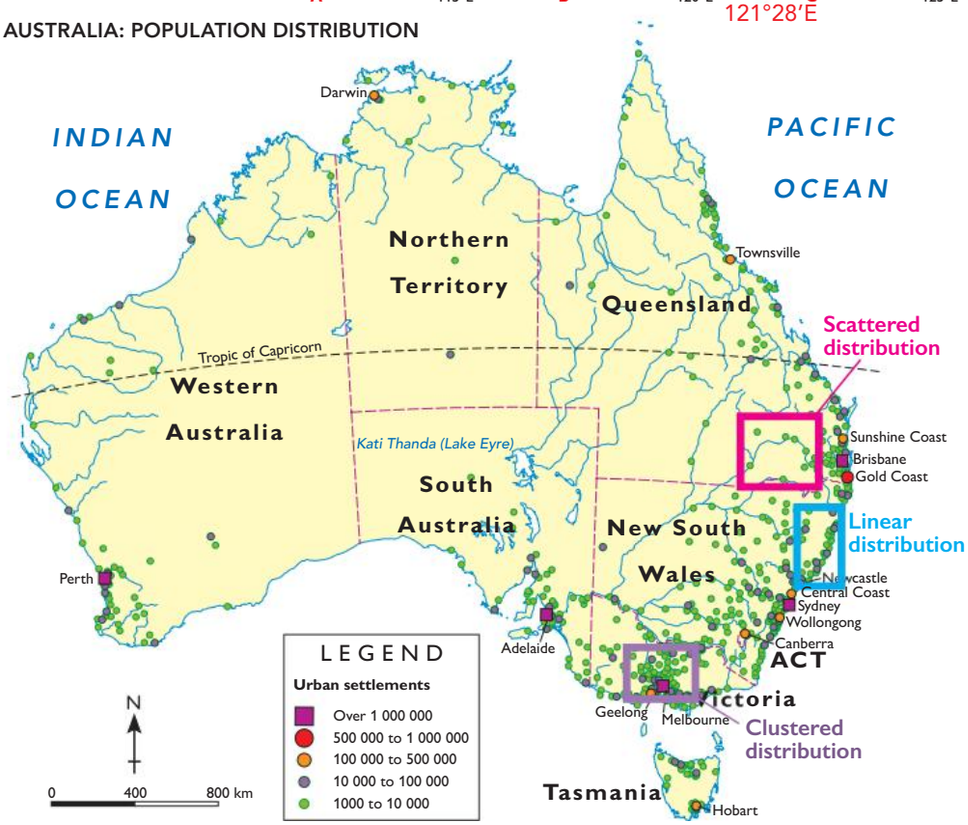
### Spatial association

Geographers do not just look at the spatial distribution patterns of geographical features in isolation. They also compare the distribution patterns of different geographical features and look for connections between them. Put simply, spatial association is the degree to which two or more geographical features occur in the same place. For example, when looked at individually, the two world maps opposite show the spatial distribution of rainfall and tropical rainforests around the world.

WESTERN AUSTRALIA




AUSTRALIA: POPULATION DISTRIBUTION

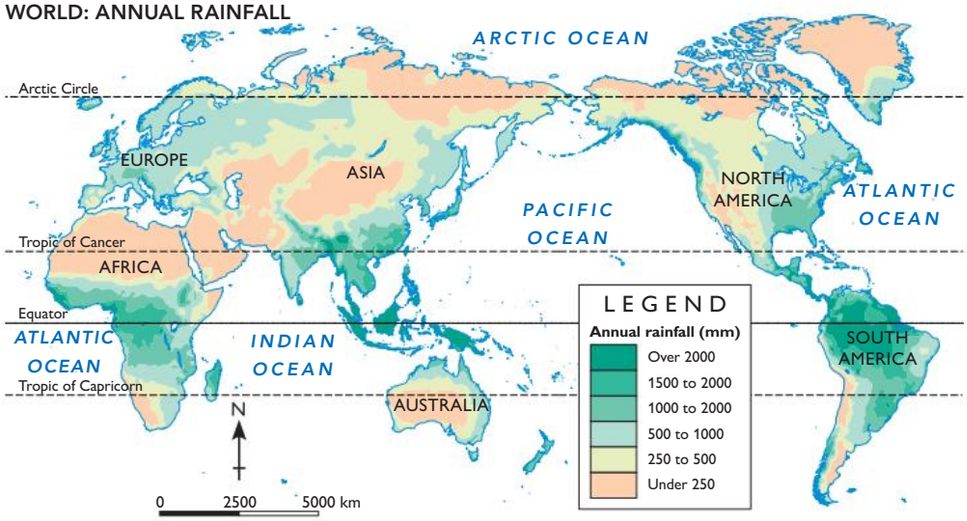


However, when these two distribution patterns are looked at together, they show that there is a strong spatial association between areas of high rainfall around the world and the location of tropical rainforest. This is largely because tropical rainforests require high rainfall to survive.

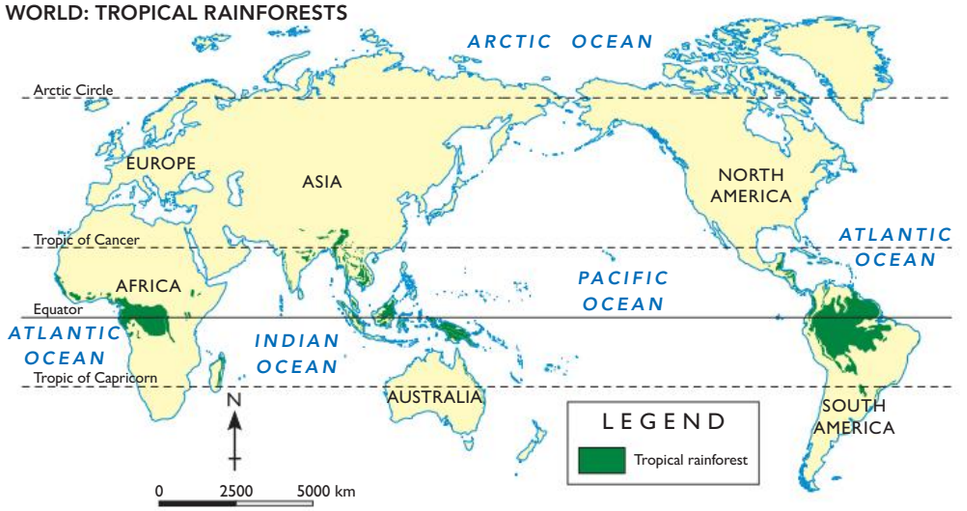
## Organisation

Organisation is the third key element of the concept of space. Organisation relates to the ways in which different spaces are organised and managed by humans. Regardless of how big or small a space is, it will often be organised into a number of different areas. These areas vary according to the purpose for which they will be used. For example, a small space such as your school is organised into many different areas. There are areas for learning such as classrooms, areas for playing such as the oval or sporting field, areas for eating such as the cafe or canteen, and areas for managing the school such as the office or administration building. Larger spaces are organised by humans in much the same way. For example, the map below shows that although the city of Melbourne covers a large area it is broadly organised into areas for living (residential areas), working (CBD and industrial areas), shopping (commercial areas) and carrying out leisure activities (parkland and forest/reserves).

**WORLD: ANNUAL RAINFALL**




**WORLD: TROPICAL RAINFORESTS**




**MELBOURNE: LAND USE**


## CHECK YOUR LEARNING

1. Why is the concept of space important in geography? What does it help geographers to do?
2. List and define the three key elements of the concept of space.
3. Use the map of Western Australia and the gazetteer index at the back of this atlas to give the absolute and relative location of Albany.
4. Describe the most common spatial distribution pattern formed by urban settlements in:
   - **a** coastal areas of far north Queensland
   - **b** inland areas near Perth
   - **c** coastal areas north of Adelaide.
5. Refer to the land use map of Melbourne and describe the distribution pattern formed by industrial areas. Describe the spatial association between industrial areas and transport links.

# Environment

Environment refers to all living and non-living things in the natural and human world that support and enrich life. The world in which we live is made up of many different environments. Some environments occur naturally, such as forests, deserts and coral reefs. These are known as natural environments. Other environments are built or altered by humans such as cities, towns and farmlands. These are known as human environments.

The concept of environment helps geographers to better understand the interrelationships between humans and the environment – that is, how environmental processes affect humans (in positive and negative ways) and how human processes affect the environment (in positive and negative ways).

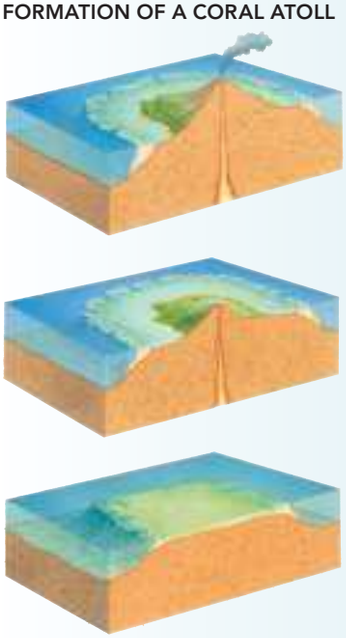
▲ The island of Bora Bora in French Polynesia is made up of an extinct volcano surrounded by a lagoon and a barrier reef. Currently, Bora Bora is 727 metres high at its peak, but geological and atmospheric processes will continue to transform this environment into a coral atoll.

## Processes form the environment

Natural and human environments are formed by a number of different processes. Some of these processes occur naturally over millions of years, while others are carried out by humans over shorter periods of time. The most common processes include:

- geological processes – movements in the Earth's crust (tectonic plates) and volcanic activity form new environments and landforms such as mountains, valleys and volcanoes
- atmospheric processes – atmospheric forces such as rain, wind and temperature form and change environments. For example, high temperatures, dry winds and a lack of rain can form desert environments.
- hydrological processes – the movement of water across the surface of the Earth (in rivers, waves and ocean currents) forms environments and landforms through erosion (the wearing away of land) or deposition (the building up of land through deposits of sand and other materials)
- biotic processes – living organisms such as plants, animals and microbes form and change environments by interacting with them. For example, coral reefs are formed by millions of tiny animals called polyps that each construct a case of limestone around themselves to create coral formations.
- human processes – the construction of cities, removal of vegetation, mining of metals and minerals and the release of chemicals and gases into the air and water all change the natural environment. Over time, these human processes transform natural environments so much that they become human environments.

**FORMATION OF A CORAL ATOLL**



◀ A volcanic island forms in the ocean on or near the boundary of two tectonic plates or over a hot spot in the Earth's crust. Pressure builds up and molten rock called magma forces its way through the crust. Between 2 to 5 million years after the eruption, coral forms around the volcanic island creating a fringing reef.

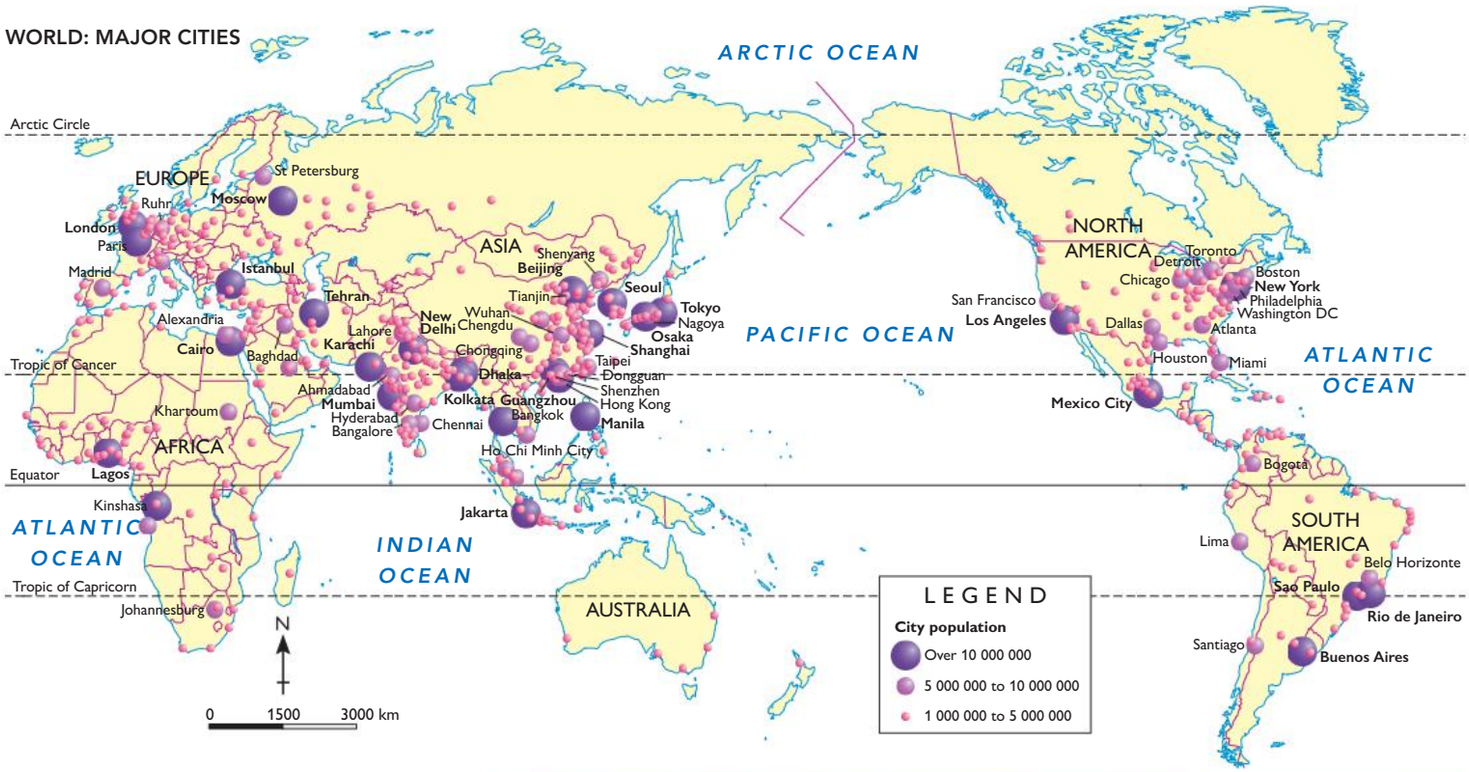
◀ Between 5 to 10 million years after the eruption, as the extinct volcanic island continues to sink and erode, the fringing reef forms a barrier reef.

◀ Between 10 to 30 million years after the eruption, the volcanic island sinks and erodes completely. A central lagoon forms, surrounded by a ring of coral islands known as an atoll.

## Humans use, change and manage the environment

Humans use, change and manage the different environments in which we live. We clear forests and change the shape of the land to graze animals and grow crops; move mountains and divert rivers to build cities and towns; and even create new land from the sea in coastal areas. In fact, humans have changed their environments so much that today very few truly natural environments remain. Cities are now the most dominant human environment on Earth. Today there are around 30 megacities (cities with populations greater than 10 million) around the world. Despite this, features of the natural environment continue to influence human environments in many ways.


Off the coast of Dubai in the United Arab Emirates, humans have created a series of artificial islands. Completed in 2006, the Palm Jumeirah required more than 50 million cubic metres of dredged sand. The World Islands were completed in 2008, using 320 million cubic metres of sand for the 300 islands and 37 million tonnes of rock to build the breakwater that surrounds them. ▶




## Hazards affect the environment

Each type of environment has its specific hazards – low-lying areas are more prone to flooding, while areas of thick bushland are more prone to bushfires. The impact of these hazards on people is determined by a combination of both natural and human factors. For example, if houses in bushland areas are built to strict guidelines, the risk and impact of bushfires can be reduced. Despite careful planning and preparation, the risk of environmental hazards cannot be eliminated completely.

▲ In May 2014, high temperatures and severe winds caused bushfires to break out across San Diego County in California. By the time the fires had been brought under control, more than 100 square kilometres had been burned and over 55 homes and businesses had been lost.

▲ In May 2014, a combination of heavy monsoon rains and low-lying urban areas resulted in widespread flooding across Bangladesh. Around 75 per cent of Bangladesh, including the capital Dhaka shown here, is less than 10 metres above sea level.

### CHECK YOUR LEARNING

1. Why is the concept of environment important in geography? What does it help geographers to do?
2. List and define the main processes that form environments.
3. Give three examples of human processes and describe the impact of these on the natural environment.
4. There are currently around 30 megacities in the world.
   - **a** Provide three examples of how megacities affect the natural environment.
   - **b** Now provide three examples of how the natural environment can affect people living in these megacities.

# Interconnection

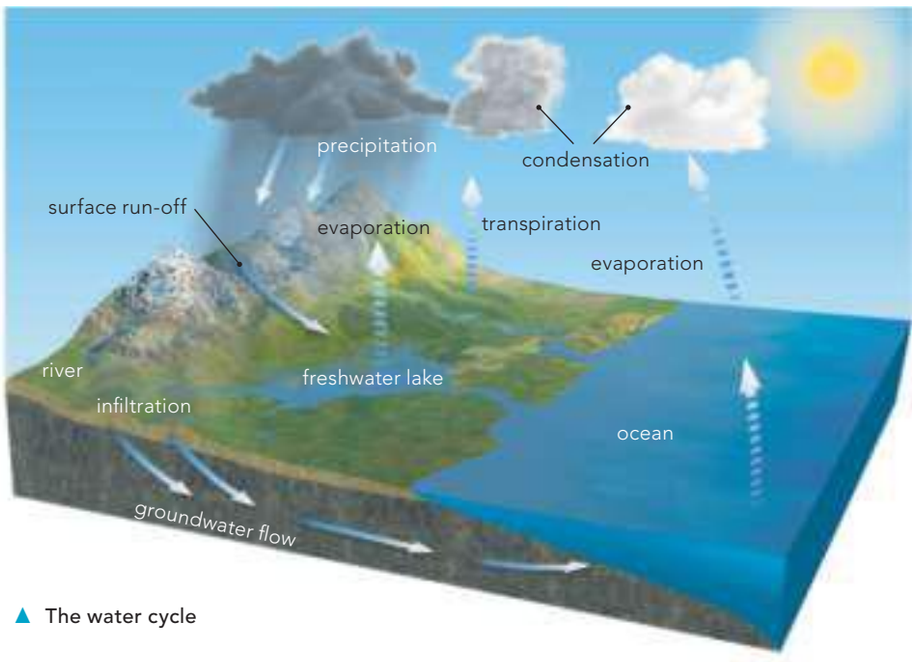
Interconnection refers to refers to the ways in which all things (living and non-living), events and processes on Earth are connected. No place or thing on Earth exists in isolation. Environmental processes (such as the water cycle) and human processes (such as migration and trade) ensure that everything on Earth is linked and connected in different ways.

The concept of interconnection helps geographers to understand the complex links between the environmental and human processes that shape the Earth. It can help them study the connections created within places and between places, and learn more about the consequences of these relationships.

## Environmental interconnections

The Earth's environmental processes connect every living and non-living thing on the planet. Movements in the Earth's surface cause earthquakes and volcanic eruptions; changing seasons and weather patterns erode mountains and coasts; and processes like the water cycle are constantly moving water across, above and below the surface of the Earth. These processes connect us on different levels:

- They create connections within the one place. For example, the climate of a particular place influences the types of plants, animals and landforms that are found there and the way they evolve and interact with each other.
- They also create connections between different places. For example, the water cycle (right) connects all places and things on Earth and has done so for billions of years. It is the planet's way of recycling water. In fact, the water you drink today could easily have been used to water crops in Africa 2000 years ago or wash a car in Italy last year – it would have been cleaned a few time since then though. Water connects us all around the world.




▲ The water cycle

## Human interconnections

Human processes and activities also connect people and places all over the planet. Some human processes have existed for thousands of years. For example, a network of trading routes dating back to 200 BCE connected Europe to Asia. Known as the Silk Road, this network linked the empires of China, India, Persia and Rome, and ensured the movement of people (migrants), goods and ideas around the world.

The route across Eurasia developed over centuries and was not a single road but a complex network of different tracks and sea routes. While silk was one of the premium goods traded along the Silk Road, other important goods such as salt, gold, spices and gunpowder were also traded. The Silk Road also connected different places and cultures through the sharing of information and new ideas.

◀ Located on the Silk Road, the city of Bukhara in Uzbekistan has long been a centre for trade, scholarship, culture and religion. The historic centre of Bukhara contains numerous mosques and has been listed by UNESCO as a World Heritage site.

THE SILK ROAD


Scale varies on this map:
Xian to Aleppo is 6400 kilometres.

WORLD: FACEBOOK USERS


▲ This map, created in December 2010 by Facebook intern Paul Butler, shows where Facebook users live relative to their Facebook friends. Each line shows a connection between pairs of friends in different places. The brighter the line, the greater the number of friends in those cities. In 2014, the number of monthly active Facebook users exceeded 1.3 billion.

Other human processes are much more recent. Today, virtual social networks such as Facebook connect billions of people all around the world. Like the Silk Road, these connections enable the exchange of information, goods and ideas. The main difference is the global scale and increased speed at which this happens.

## Cause-and-effect interconnections

Environmental and human processes are both examples of cause-and-effect interconnections that can operate within and between places. Global warming is an excellent example of cause-and-effect interconnections that involves both environmental and human processes. The greenhouse effect is actually a natural environmental process that traps the Sun's energy (radiation) under a layer of gas and clouds to warm the planet. Without it, the Earth would be too cold to support life as we know it. However, over the past few hundred years, human processes like the burning of fossil fuels and the clearing of forests have raised the levels of greenhouse gases in the atmosphere, causing what scientists call the enhanced greenhouse effect. This is a process whereby less of the Sun's energy can escape and more heat is held closer to the Earth's surface. The effect of this is global warming.

### CHECK YOUR LEARNING

1. Why is the concept of interconnection important in geography? What does it help geographers to do?
2. The water cycle is one example of an environmental interconnection. It connects people within places and between places. Provide two examples of how it does this.
3. The Silk Road and the Internet are both examples of human interconnections. List two ways in which they are similar and two ways in which they are different.
4. The enhanced greenhouse effect is one example of cause-and-effect interconnections. List one environmental process and one human process that contribute to the enhanced greenhouse effect.

# Sustainability

Sustainability refers to the ongoing capacity of the Earth to support and maintain all living things. Sustainability is a broad goal that tries to balance the needs and wellbeing of the natural environment with the needs and wellbeing of humans (both social and economic). This means developing ways to ensure that all resources and environments are used and managed responsibly so they can be maintained for future generations.

The concept of sustainability helps geographers to investigate how natural and human processes compete, and encourages them to develop new ways to manage resources so that they will be sustained into the future. Initiatives to improve sustainability can operate at three levels; local, national and international.

## Understanding sustainability

One of the best ways of understanding the importance of sustainability is to look at the consequences of unsustainable practices and resource use. Rapa Nui (also known as Easter Island) is a remote island in the Pacific Ocean. It provides one of the best examples of the effects of unsustainable resource use. Today, Rapa Nui is best known for hundreds of large stone statues (known as moai). Moai were built to honour the gods, ancestors and tribal chiefs.

Most historians believe that Rapa Nui was settled by Polynesian people around 800 CE. At this time, thick forest covered the island providing wood for canoe building, housing, fuel for cooking, and for use as rollers and other structures for moving and erecting moai. Between around 1250 and 1500 CE, tribes on the island competed to build the biggest moai. As the population increased to around 7000, more pressure was placed on the natural resources of the island, especially the forests. The trees, however, were not being replaced by new growth because rats brought by the original settlers as a source of food were eating all of the seeds.

Once the last tree had been cut down, the population could no longer build canoes to catch fish or leave the island. They also ran out of timber to build houses, cook and keep themselves warm. Without trees, the soil eroded into the sea, there was no wild fruit to eat and all species of land birds became extinct through hunting. Eventually the civilisation collapsed due to civil war over resources and famine.

RAPA NUI (EASTER ISLAND): TOPOGRAPHIC MAP


Around 800 moai statues were carved and erected by competing tribes on Rapa Nui (Easter Island) between 1250 and 1500. On average, each moai is four metres in height and weighs 13 tonnes.

## Improving sustainability

The burning of non-renewable fossil fuels to generate electricity and power industries around the world has long been recognised by experts as unsustainable. Over recent decades, scientists, engineers and politicians have been working hard to develop viable and sustainable alternatives to fossil fuels. Solar technology is one of the most popular sources of sustainable energy. Currently, there are numerous projects and initiatives underway to increase the adoption and efficiency of solar power around the world. These are taking place on a number of different scales.

### Local scale: Installation of home solar panels

At the local scale, individual home owners can reduce their reliance of electricity generated from fossil fuels (and their power bills) by installing in-home solar panels.

▲ According to figures released by the Clean Energy Regulator (an independent authority established by the Australian Government) the number of roof-mounted solar systems increased from just 20000 in 2008 to over 1 million in 2013.

### National scale: Construction of solar power plants

At the national scale, governments can do a lot to increase the uptake of solar power. One government strategy adopted in Australia involved offering financial incentives (known as rebates) to home owners to install solar panels. Another included offering payments to home owners for energy fed back into the electricity grid that was generated from these solar panels.

Another way governments can increase the uptake of solar energy is by investing in the construction of solar power plants or by encouraging large companies to do so.

### International scale: Research and development projects

At the international scale, there are many initiatives, research organisations and agreements designed to increase the efficiency of solar energy and facilitate its adoption in countries around the world. For example, in 2012 Australia's national science research agency the CSIRO (in conjunction with six Australian universities and three international universities) established the Australian solar thermal research initiative (ASTRI). ASTRI supports research with the aim of transforming Australia into a world leader in solar power technologies.

Multinational companies also meet at international trade fairs and conferences each year to demonstrate technological advances and share research finding and ideas.


▲ Each year in the German city of Munich, around 2200 international exhibitors and 50000 visitors attend Intersolar Europe, the world's largest solar industry exhibition. New products, such as this electric car that can be charged directly from solar panels on the roof of the carport, are displayed.

◀ The Ivanpah Solar Electric Generating System was officially opened in February 2014. Located in the Mojave Desert in California, it is currently the world's largest solar power plant. It was constructed by two large American companies in conjunction with the United States Department of Energy at a cost of $2.2 billion. It is estimated the plant will supply around 140000 homes.

CHECK YOUR LEARNING

1 Why is the concept of sustainability important in geography? What does it help geographers to do?
2 Create a simple flow chart outlining the main events and factors that led to the eventual collapse of civilisation on Rapa Nui.
3 Solar technology is one of the most popular sources of sustainable energy. Recycling is another major contributor to a more sustainable future. Give examples of a way in which the recycling of different materials can help conserve natural resources at the local scale, the national scale and the global scale.

# Scale

Scale refers to the different levels at which geographical processes or events can be observed and investigated. Geographers often study the effects of geographical processes and events on many different spatial levels – from very small areas (such as a small town or suburb) to very large areas (such as the whole world).

The concept of scale helps geographers to study the effects of processes and events on the natural and human world. Geographical inquiries often take place on these spatial scales (from smallest to largest):

- local scale – i.e. a local park, suburb, town or rural area
- regional scale – i.e. a larger geographical area such as the Hunter Valley of New South Wales
- national scale – i.e. a single country such as Australia
- international scale – i.e. two or more countries around the world such as Australia and Indonesia
- global scale – i.e. the entire planet.

## Understanding scale

Scale is one of the most important concepts to keep in mind when planning and conducting geographical inquiries. Complex issues such as global warming, loss of biodiversity, migration and environmental degradation can often be the result of many competing geographical, economic, political and environmental factors. As a result, it can be very difficult to consider and investigate them all simultaneously. In these cases, it can often be helpful to explore one or more of these contributing factors at a smaller scale before considering the bigger picture. Good geographers know that small changes at the local scale can influence much larger changes at the global scale.

Migration is a complex issue that geographers worldwide study at all scales to better understand its causes and effects. Some examples of these investigations are provided below.

## Local scale

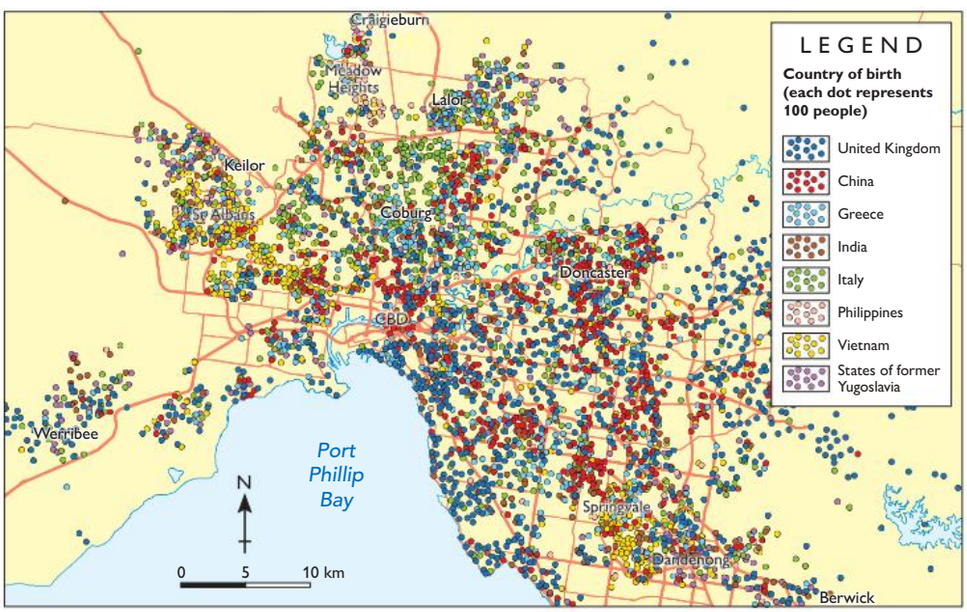
A geographical inquiry into the personal experiences of new Vietnamese migrants who choose to settle in the Sydney suburb of Cabramatta could be carried out at the local scale.

▲ The annual Moon Festival being celebrated with a traditional lion dance in Cabramatta.

## Regional scale

A geographical inquiry comparing the experiences of migrants from different countries who have settled in suburbs across the greater Melbourne area could be carried out at the regional scale.

**MELBOURNE: OVERSEAS BORN**




### CHECK YOUR LEARNING

1 Why is the concept of scale important in geography? What does it help geographers to do?

2 What are the five most common spatial scales at which geographers study the effects of geographical processes and events? Describe each of these in your own words.

3 What is the advantage of investigating complex geographical issues, such as migration, at different scales?

4 Good geographers know that small changes at the local scale can influence much larger changes at the global scale. Describe how the following changes at the local scale can contribute to changes at the global scale:

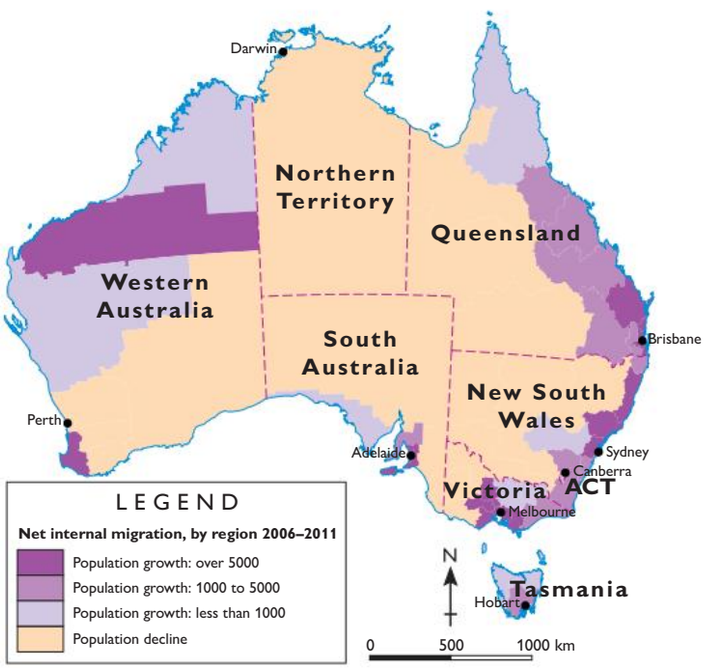
**a** clearing of local bushland.

**b** release of toxic chemicals into a local creek.

## National scale

A geographical inquiry into the reasons for internal migration in Australia could be carried out at the national scale.

**AUSTRALIA: NET INTERNAL MIGRATION BY REGION**




## International scale

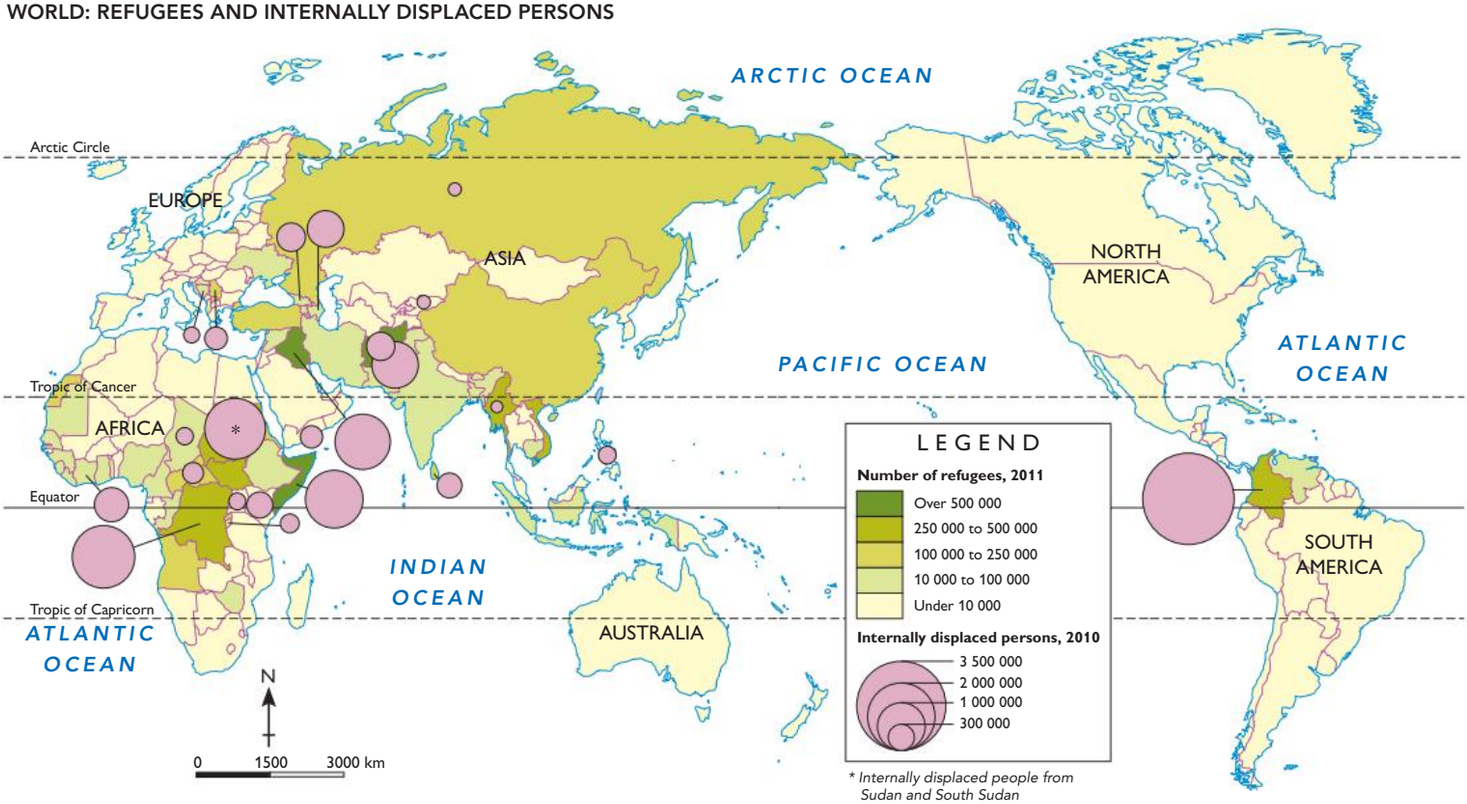
A geographical inquiry into the reasons for an agreement between the governments of Australia and Papua New Guinea to reopen the Manus Island Detention Centre (and the effects of this decision on asylum seekers and Australia's international relations) could be carried out at the international scale.

▲ In 2012, the Australian Government reached an agreement with the Papua New Guinean Government to reopen the Manus Island Regional Processing Facility – a detention centre for asylum seekers attempting to enter Australia by boat. The Australian Government announced the international agreement in a joint press conference with Papua New Guinea's Prime Minister Peter O'Neill.

## Global scale

A geographical inquiry into the numbers of refugees and internally displaced persons around the world, and the factors contributing to this problem could be carried out at the global scale.

**WORLD: REFUGEES AND INTERNALLY DISPLACED PERSONS**

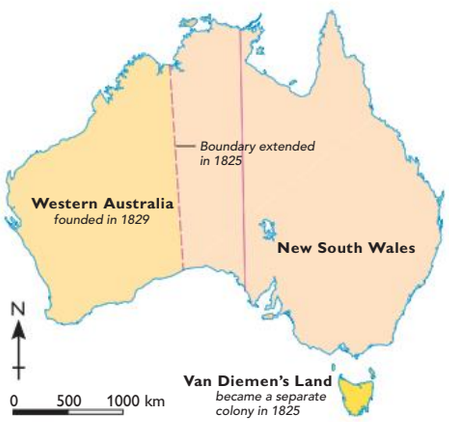


# Change

Change refers to the dynamic nature of all things (living and non-living) on Earth over time. The Earth is constantly changing. Some changes happen very rapidly and are easily noticed. Other changes take place over millions of years and are almost undetectable to humans. Change also takes place on many different spatial levels, from local to global.

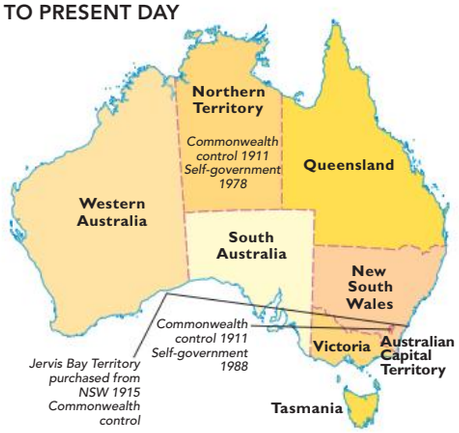
The concept of change helps geographers to identify and understand the effects of different natural and human processes over time. By studying examples of change in the past (such as the effects of erosion on coastlines around Australia), they are better able to predict future change and develop new ways of dealing with that change.

COLONIES 1788 TO 1829




COLONIES 1830 TO 1900


STATES AND TERRITORIES 1901 TO PRESENT DAY




## Understanding change

The ancient Greek philosopher Heraclitus (c. 535 BCE to 475 BCE) is perhaps most famous for noting that 'the only thing that is constant is change'. He was right. All things on the planet, whether living or non-living, are in a constant state of change. Geographers study this change in order to understand the environmental and human processes that drive it.

### Different rates of change

Although change is constant, it can take place at different rates. For example:

- it can take place quickly and be easily observed (like the effects of Hurricane Katrina on the city of Biloxi that took place over a few minutes or hours). This is known as short-term change.
- it can take place over a longer period of time and be more difficult to observe (like the formation of Australian states and territories from 1788 to 1901). This is known as medium-term change.
- it can take place very slowly and be almost impossible to observe (like the formation of continents that takes place over hundreds of millions of years). This is known as long-term change.

### Different scales of change

Change also takes place on many different scales, from local to global. For example:

- people in the City of Biloxi in Mississippi who lost their homes, businesses and loved ones were affected by Hurricane Katrina on a local level
- people living in Australia between 1788 and 1901 who saw the transition of the country from a collection of British colonies to a federated commonwealth of states and territories were affected on a national level
- all living and non-living things that existed on Earth around 220 million years ago, when scientists believe the continents began to form, would have been affected on a global scale – as we continue to be to the present day.

◀ Before the formation of the Commonwealth of Australia in 1901, the six Australian colonies were self-governing and largely influenced by British rule. Over a period of decades, numerous changes were made to the borders and laws of these colonies before they eventually voted to become a federation.

### CHECK YOUR LEARNING

1 Why is the concept of change important in geography? What does it help geographers to do?

2 Look carefully at the images of Biloxi opposite.
   - **a** Identify the major changes to the city as a result of Hurricane Katrina.
   - **b** On what scale did these changes occur?
   - **c** At what rate did these changes occur?

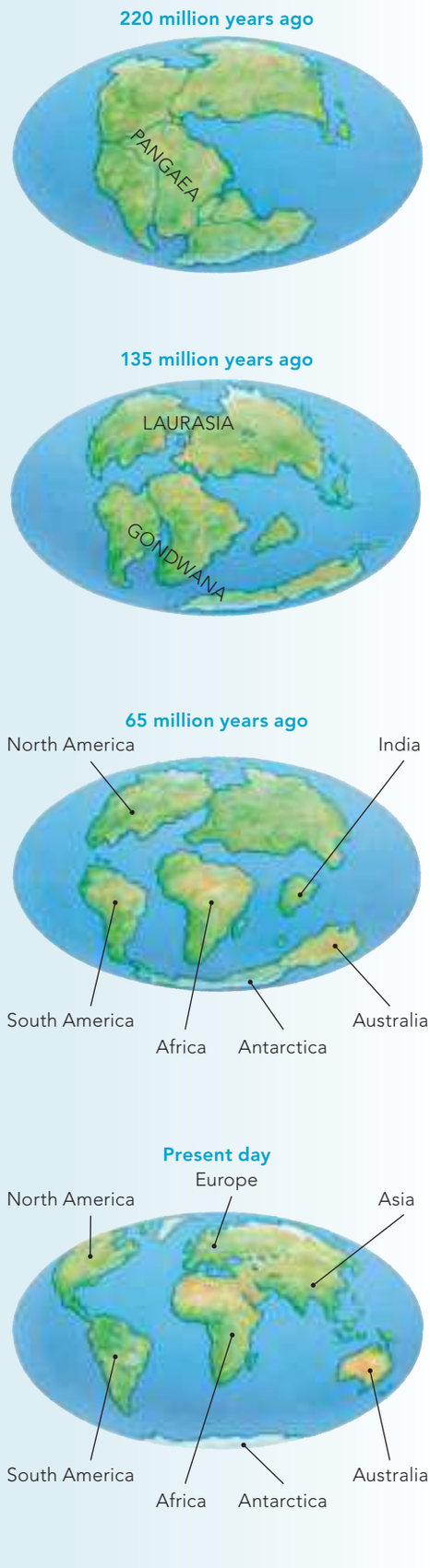
3 A list of changes that may currently be taking place around the world are provided below:
   - a new shopping centre is being built in a suburb of Adelaide
   - warming of the oceans around the world is resulting in the bleaching of coral reefs
   - heavy rains across South-East Asia are causing widespread flooding in a number of countries.
   - **a** Rank these changes in order from slowest to fastest.
   - **b** Identify the different scales at which these changes are taking place.

BILOXI, USA, 12 APRIL 2005: SATELLITE IMAGE


BILOXI, USA, 31 AUGUST 2005: SATELLITE IMAGE


▲ These satellite images show change over a short period of time in the city of Biloxi, Mississippi due to Hurricane Katrina.

CONTINENTAL DRIFT




The theory of continental drift was put forward by ► geographer Abraham Ortelius in around 1596. It states that the continents we know today slowly drifted across the Earth's surface to their current positions. Around 220 million years ago, the continents were all part of a giant landmass known as Pangaea. Over millions of years, Pangaea split apart and eventually broke into what we know today as continents.




SECTION 2

# Geographical knowledge and understanding

This section includes a range of topics and case studies linked directly to the geography syllabuses for students in Years 7–10 around Australia. They are organised by year level and unit to ensure full coverage.

# Freshwater resources

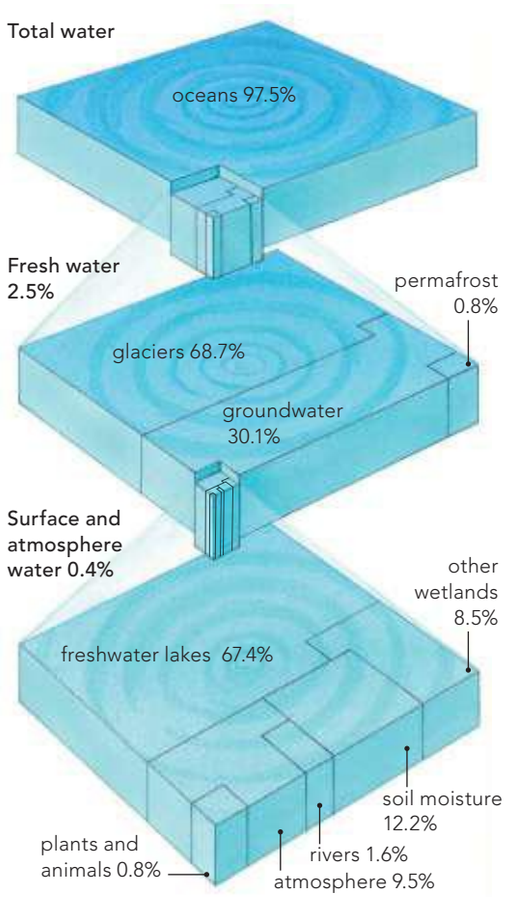
The amount of water on Earth does not change. Water moves from the land to the sky and back to the land again in a process called the water cycle. Only a very small percentage of water on Earth is fresh and available for consumption. Typically, this is found in surface water such as lakes and rivers. Most of the fresh water on Earth is in storage underground or locked in the polar ice caps.

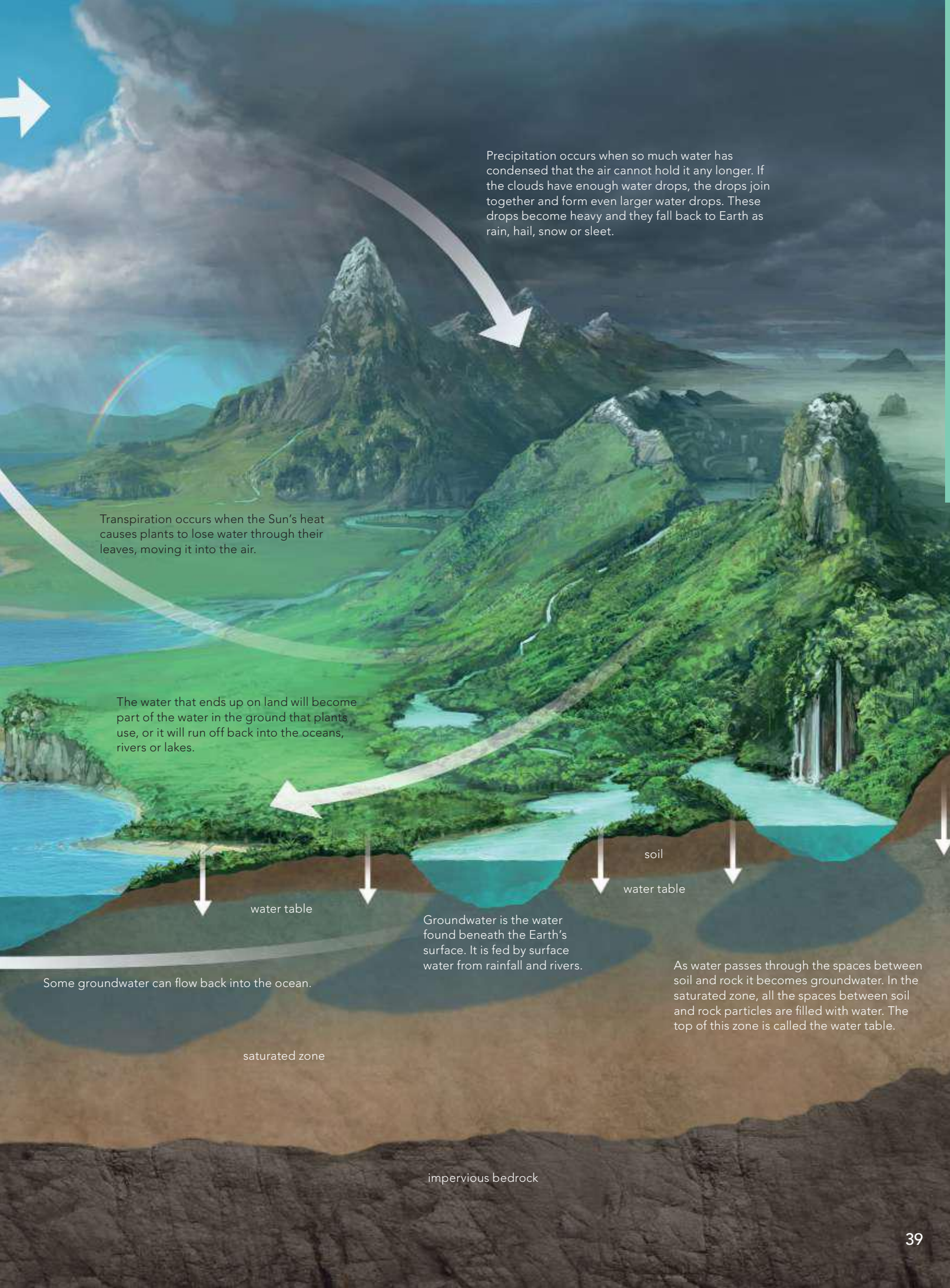
▲ Nearly 70 per cent of all the fresh water on Earth is located in Antarctica's ice sheet.

Condensation occurs when water vapour in the air cools down and changes to tiny drops of water. When these drops collect together we see them as clouds.

The Sun heats the water in oceans, lakes and rivers turning it into a gas called vapour. The water vapour rises into the air. This process is known as evaporation.

**WORLD: DISTRIBUTION OF WATER**

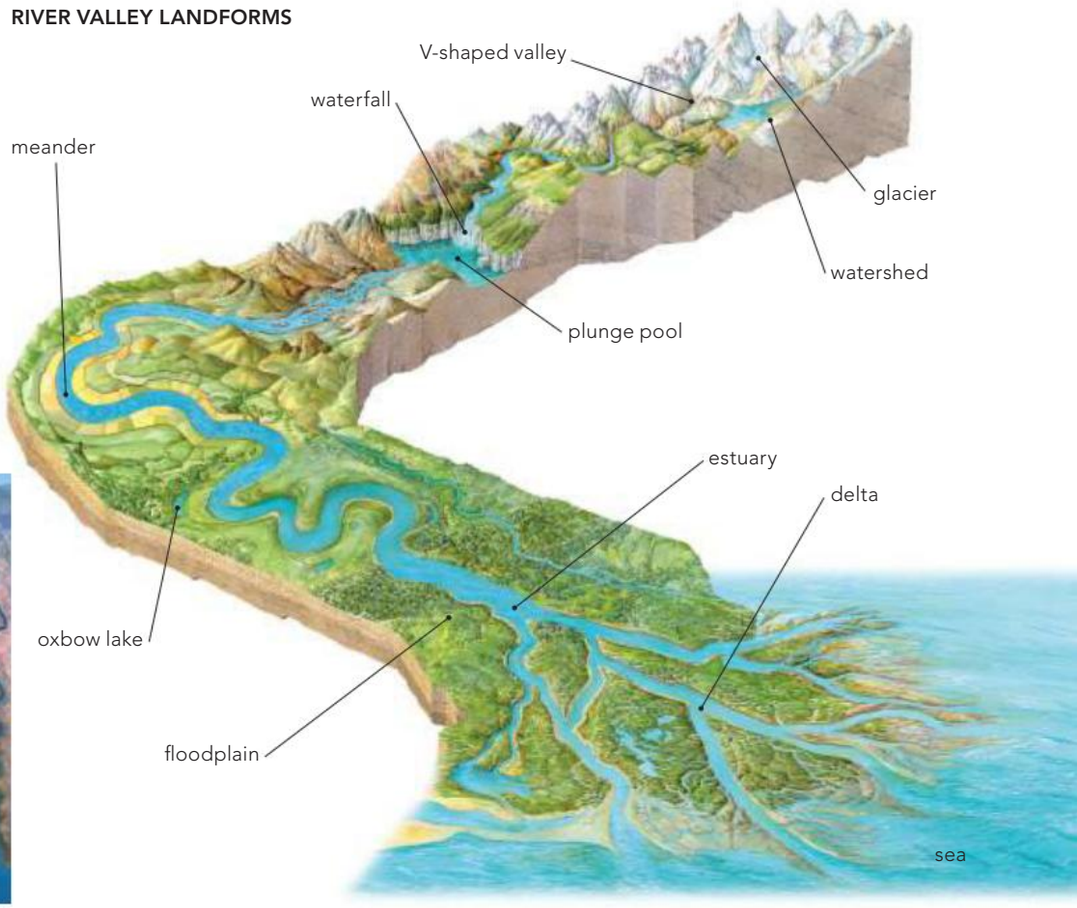



Precipitation occurs when so much water has condensed that the air cannot hold it any longer. If the clouds have enough water drops, the drops join together and form even larger water drops. These drops become heavy and they fall back to Earth as rain, hail, snow or sleet.
Transpiration occurs when the Sun's heat causes plants to lose water through their leaves, moving it into the air.
The water that ends up on land will become part of the water in the ground that plants use, or it will run off back into the oceans, rivers or lakes.
soil
water table
water table
Groundwater is the water found beneath the Earth's surface. It is fed by surface water from rainfall and rivers.
Some groundwater can flow back into the ocean.
As water passes through the spaces between soil and rock it becomes groundwater. In the saturated zone, all the spaces between soil and rock particles are filled with water. The top of this zone is called the water table.
saturated zone
impervious bedrock

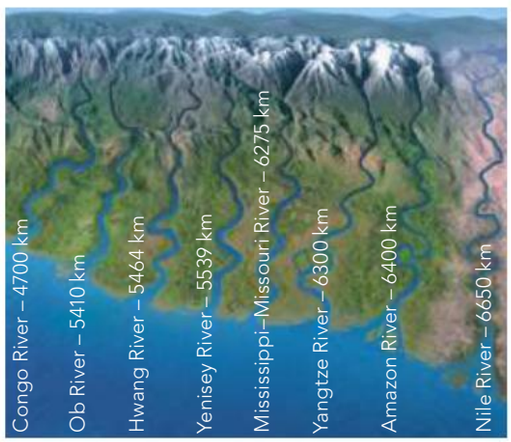
# Rivers connect places

Rivers have their beginnings in mountains where they are often fed by meltwater from snow and glaciers. In the mountains, rivers are narrow and fast flowing, eroding the ground vertically to form steep V-shaped valleys. As rivers reach more level ground they widen and begin to meander. On the floodplain, rivers slow and erode the ground horizontally. Further downstream, rivers slow even further and deposit their load (eroded from ground upstream) to form deltas. Finally, they flow into a sea, lake or larger river.

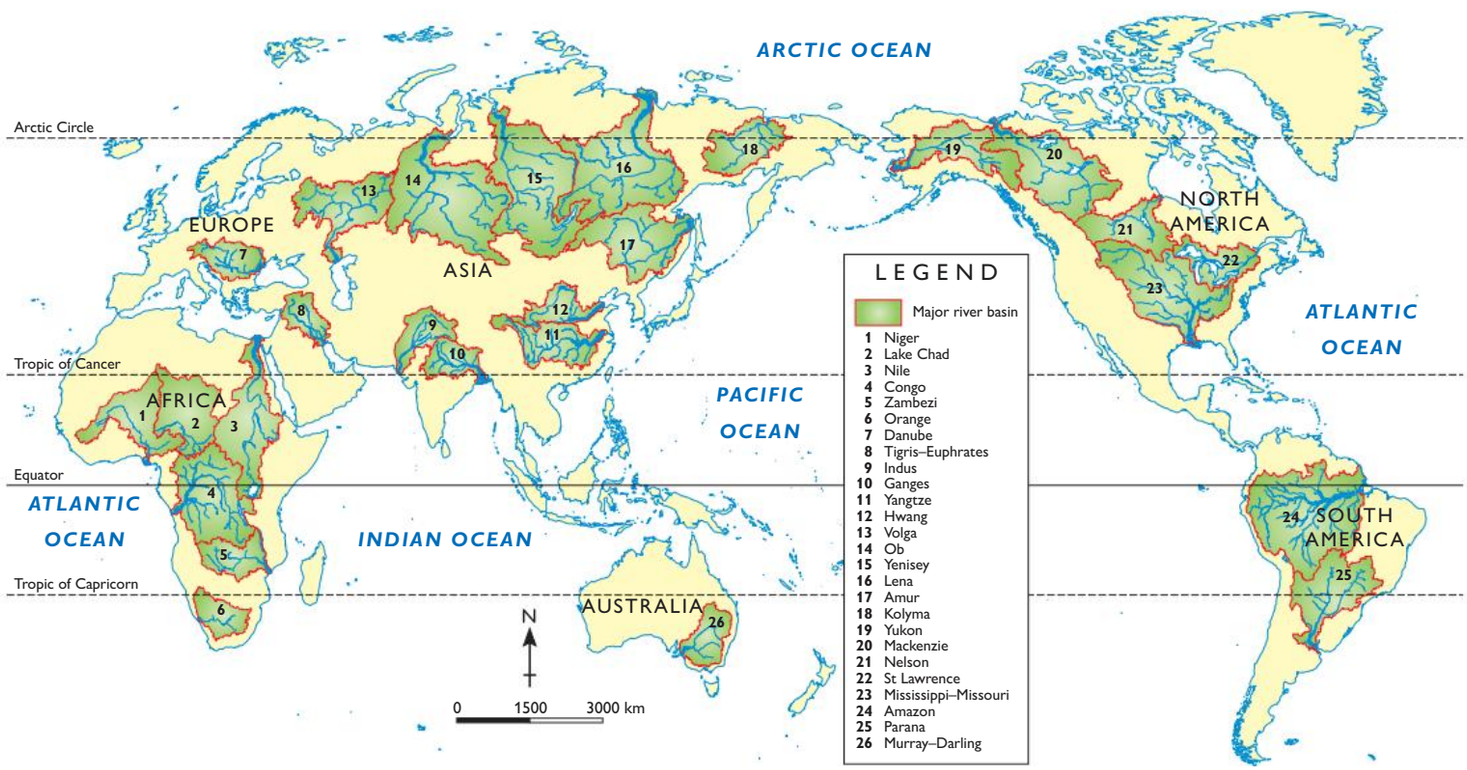
**RIVER VALLEY LANDFORMS**




**WORLD: LONGEST RIVERS**




**WORLD: RIVER BASINS**

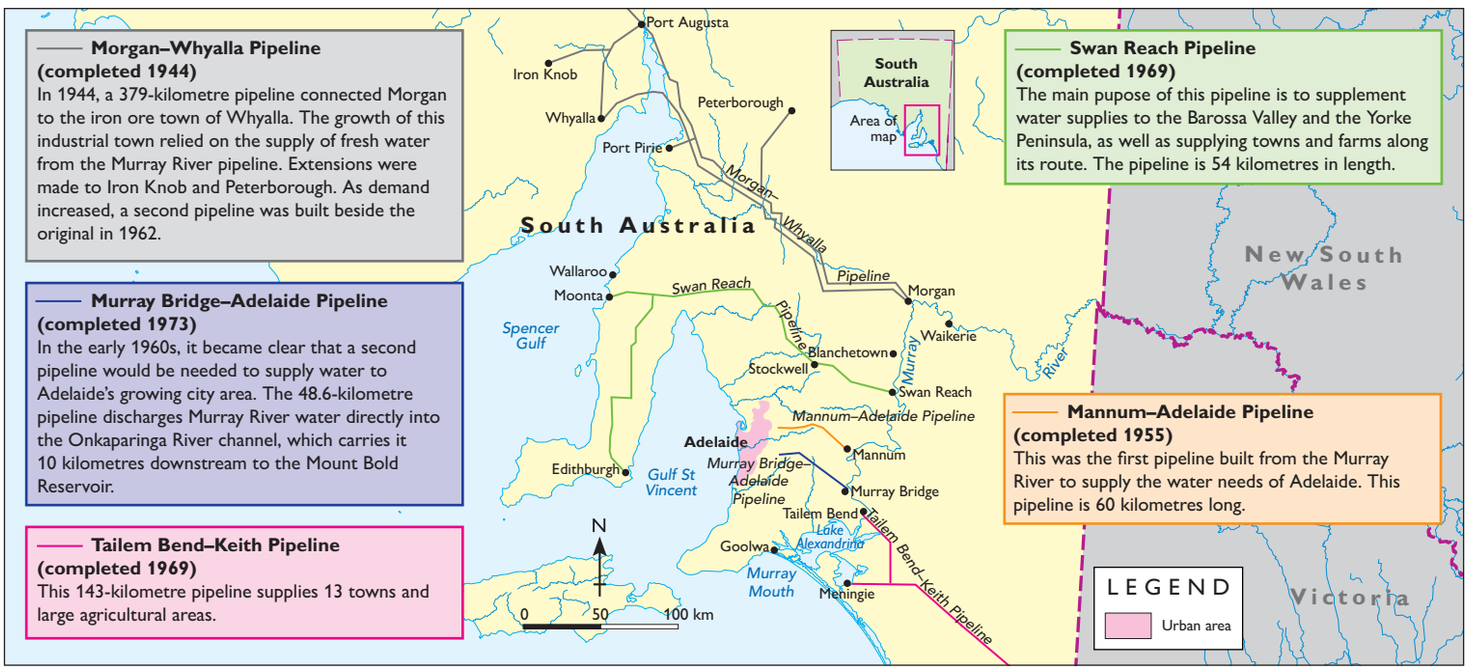


## The Murray River connects places

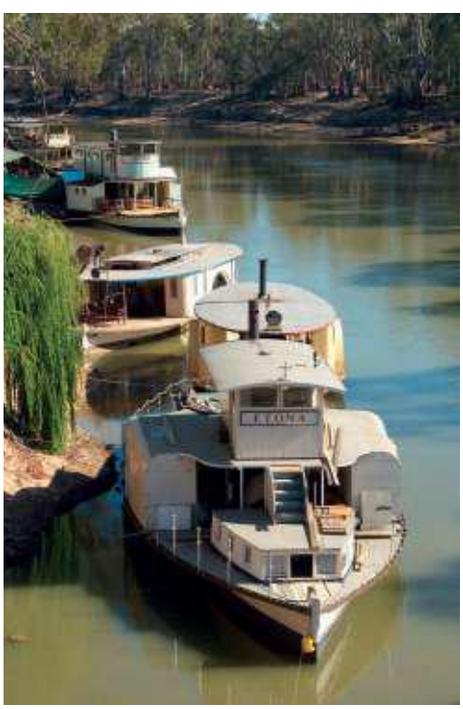
Australia's largest river, the Murray, is a vital source of water for South Australia. It connects places that rely on its water for agricultural, industrial and domestic use. Water is distributed from different locations along the banks of the Murray by five major pipelines. Two pipelines supply metropolitan Adelaide and three supply regional parts of South Australia. These pipelines bring economic benefits to towns and farmland located many kilometres from the river.

Construction of the Morgan–Whyalla Pipeline in 1942 ▶

**SOUTH AUSTRALIA: MURRAY RIVER PIPELINES**




▲ During the early 20th century, the Murray River was a major inland highway. Fleets of paddle steamers and their barges carried produce from farms and stations. There were also floating shops, mail steamers and passenger boats. The *Merle* was a trading boat that travelled the Murray River selling goods to people in remote towns and farms.



Today, wooden paddle steamers are a popular tourist attraction on the Murray River at Echuca. ▶

CASE STUDY

# Mississippi River: Connecting North America

The Mississippi River is part of the largest and longest river system in North America. When combined with the Missouri River, which flows into the Mississippi near St Louis, its total length is 6275 kilometres. The main sources of the river are the eastern slopes of the Rocky Mountains and the western slopes of the Appalachian Mountains. The river drains an area of more than three million square kilometres and connects 31 states within the United States as well as two Canadian provinces. More than 18 million people source their drinking water from the river.

**UNITED STATES AND CANADA: MISSISSIPPI RIVER BASIN**


## Mississippi River Basin

The Mississippi has been used for hundreds of years as a trading route. Native Americans used it to transport people and goods. European explorers followed, using the river to access the centre of the continent and to carry goods such as animal furs. Today, more than 450 million tonnes of freight are transported along the river each year, mainly on large barges pushed by tugboats. Agricultural and mine products, as well as manufactured goods, are transported from one end of the country to the other. This commerce has given rise to some of North America's great cities including Minneapolis, St Louis, Memphis and New Orleans.

◀ Barges travelling along the Mississippi River near St Louis.

Living near rivers brings many benefits to people and communities, but it can also bring dangers. The Mississippi River often overflows and floods across the surrounding floodplain. The worst floods in a century occurred in 2011 when rain from two major storms combined with water from melting snow to swell the tributaries of the Mississippi River. Many people were evacuated from their homes and thousands of square kilometres of farmland were covered in water.

Some homes and towns were protected from the floods by earthen walls known as levees. ▶

MISSISSIPPI RIVER BASIN: NITROGEN USE


## Impact of agriculture in the Mississippi River Basin

The Mississippi floodplain contains some of the most fertile soils in North America. These soils, combined with a mild climate and a reliable supply of water, make the region highly suitable for farming. The Mississippi River Basin produces most of the corn, soybeans, wheat, cattle and pigs grown in the United States, as well as significant amounts of cotton and rice. The value of these agricultural products is over US$54 billion every year and accounts for 92 per cent of the nation's farm exports.

Many farmers in the basin use nitrogen-rich fertilisers, which can wash into streams and then into the Mississippi River. They are carried downstream and collect in the lower reaches of the river and the Gulf of Mexico. Here, they fertilise marine plants that then starve the water of oxygen creating large 'dead zones'. This causes many problems for both the natural environment and the people and communities that rely on the waters of the river and the gulf for their livelihood.

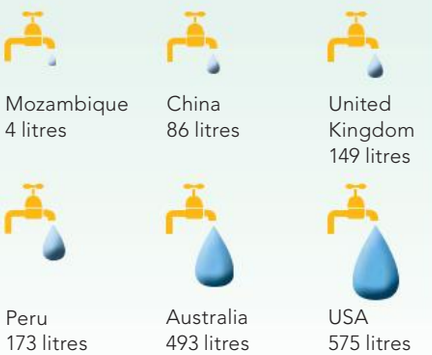

▲ This satellite image shows two large areas of pollution. The plume to the right is flowing into the Gulf of Mexico from the main branch of the Mississippi River. To the left, another plume is travelling down the Atchafalaya River. The Mississippi River system carries over 1.5 million tonnes of nitrogen pollution into the Gulf of Mexico every year.

# Access to water

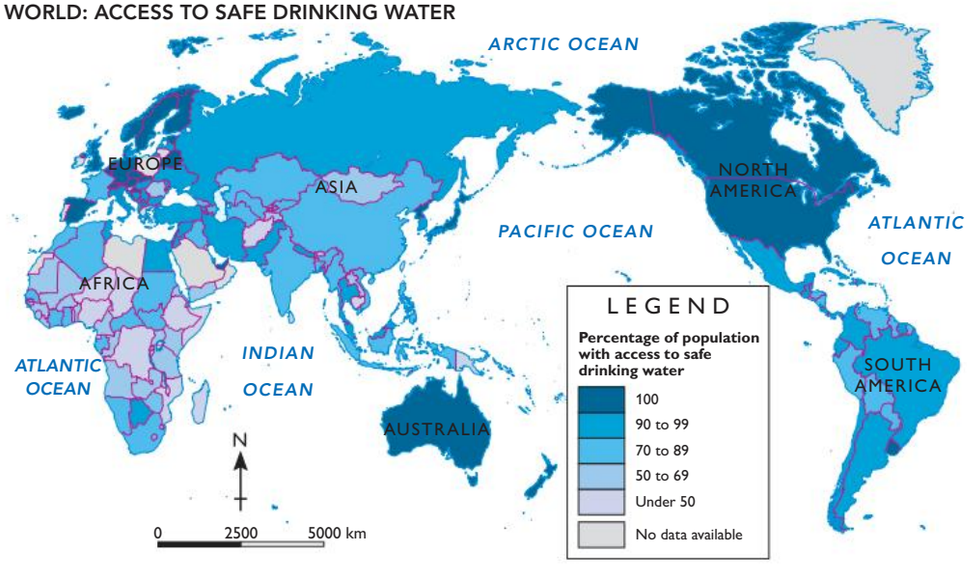
Clean water or potable water is water that is safe to drink and to use for cooking and washing. Each person needs between 20 and 50 litres of clean water a day for their basic drinking, cooking and sanitation. In 2010, nearly 89 per cent of the world's population had access to a safe water supply. This still leaves about 800 million people without safe water, mostly in developing countries. For these people, diseases transmitted in water, such as cholera and diarrhoea, are some of the leading causes of death. It is estimated that every 20 seconds a child dies as a result of poor sanitation.

Australians are among the world's biggest users of water, using almost 500 litres of water per person per day. This figure is for all water use, including water used in agriculture and industry. While this amount has declined in recent years it still ranks among the highest in the world.

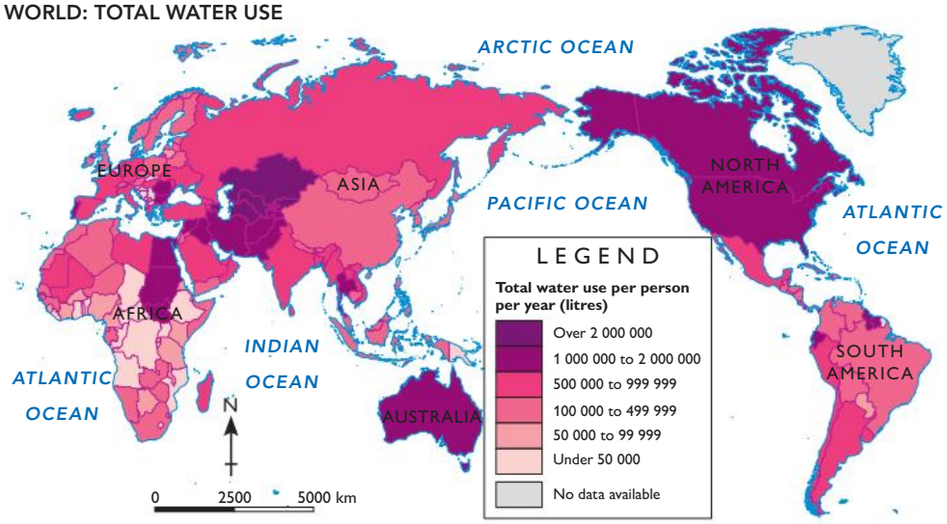
**SELECTED COUNTRIES: HOUSEHOLD WATER USE PER PERSON PER DAY**




**WORLD: ACCESS TO SAFE DRINKING WATER**



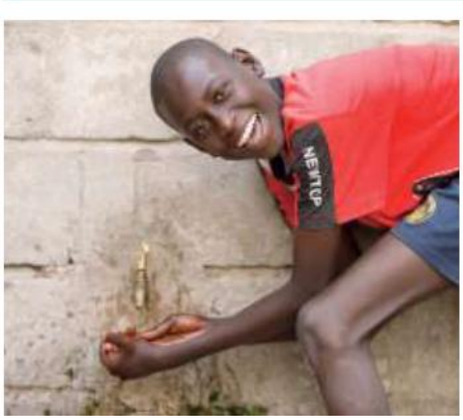

**WORLD: TOTAL WATER USE**




## Water and the Millennium Development Goals

In 2000, the United Nations formulated the Millennium Development Goals – goals for human development over the next several decades. One of these explicitly referred to water.

Target: To halve by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.



▲ More than 2.1 billion people gained access to safe drinking water between 1990 and 2010, exceeding the target. Most of these people live in cities.

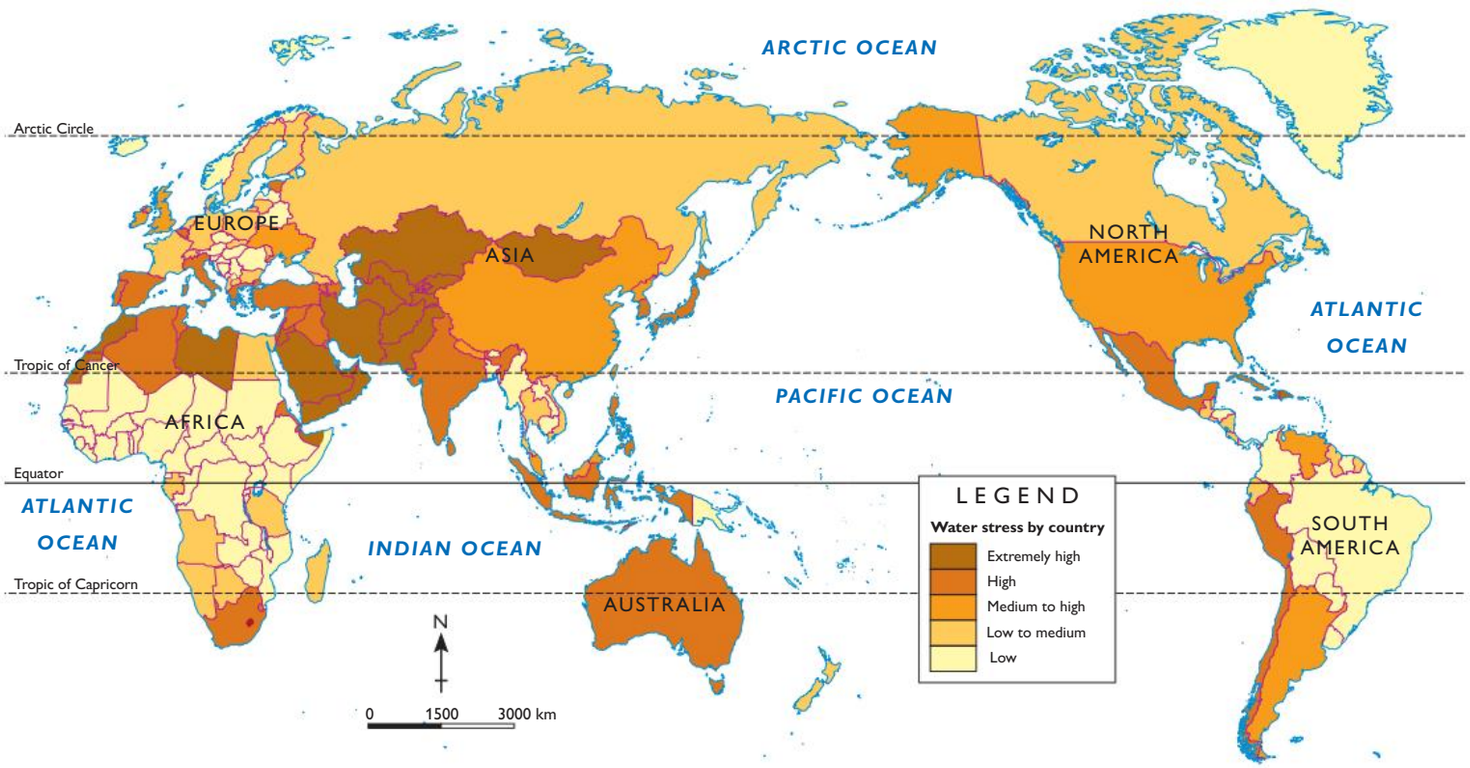
▲ Eighty-three per cent of the people without access to safe water live in rural areas.

▲ Over 240 000 people a day gained access to improved sanitation facilities from 1990 to 2011, but this rate is not enough to meet the target by 2015.

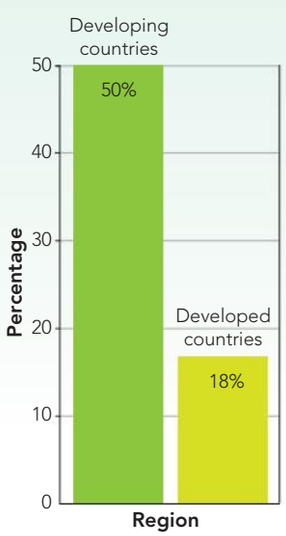
## Water stress

Water stress occurs when the demand for water exceeds the available water resources. It affects every continent in the world. During the last century, water use has grown at more than twice the rate of population increase. Thirty-six countries are now classified as experiencing high to extremely high water stress levels. It is predicted that by 2030, 47 per cent of the world's population will be living in areas of high water stress.

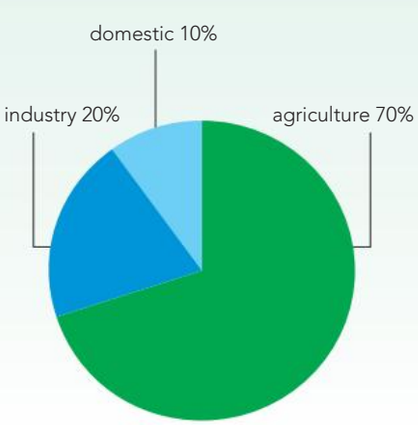
**WORLD: WATER STRESS**



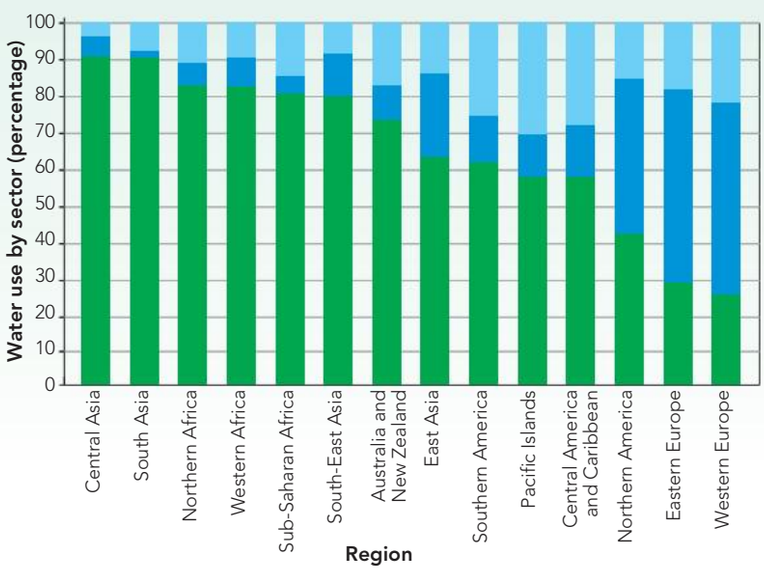

**WORLD: INCREASE IN WATER USE BY 2025**




**WORLD: WATER USE**




**WORLD: WATER USE BY SECTOR AND REGION**



CASE STUDY

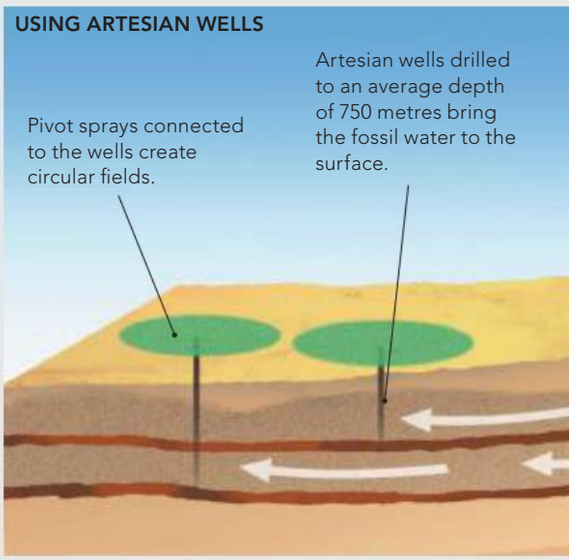
# Buraida: Irrigating the desert in Saudi Arabia

These spectacular circles on the Saudi Arabian desert floor are circular crop fields irrigated with water pumped from underground aquifers. Each field is watered using a pivot spray that delivers water in overhead sprayers connected to a central pump. This water fell to Earth as rain 10 000 to 30 000 years ago. This 'fossil water' can be considered a non-renewable resource in Saudi Arabia as current climatic conditions are not replenishing the aquifers.

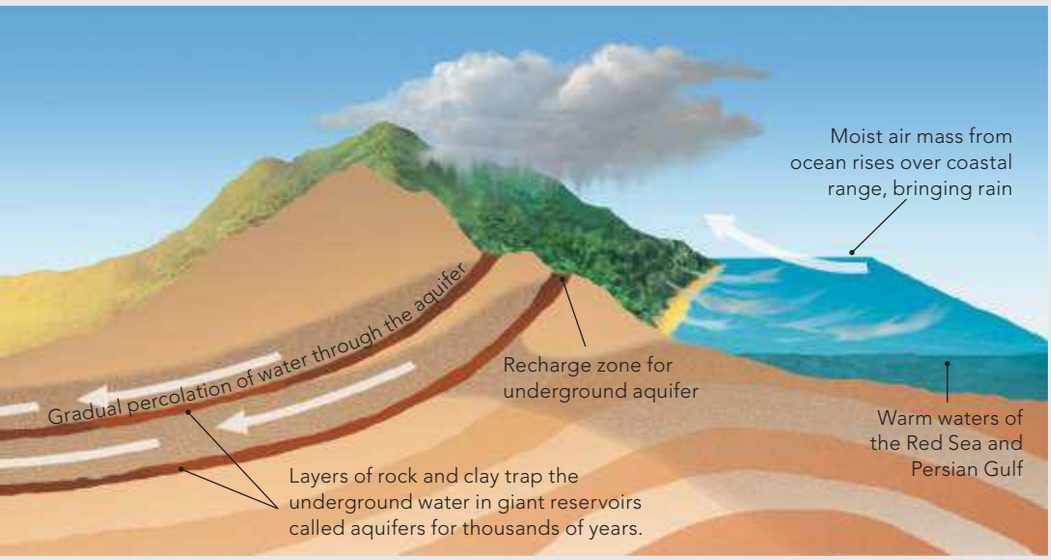
▲ The crops at this 35 000-hectare farm include wheat, potatoes, onions and fruit. In the oblique aerial photograph above, workers can be seen harvesting tomatoes for the Saudi markets.

SAUDI ARABIA: LAND USE

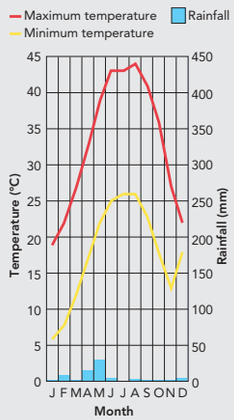

USING ARTESIAN WELLS




▲ Circular crops with diameters of up to half a kilometre grow in the desert of Saudi Arabia near Buraida. This satellite image has used the false colour red to show the irrigated fields with healthy vegetation. The brown fields represent land ready for planting.




**BURAIDA: CLIMATE GRAPH**



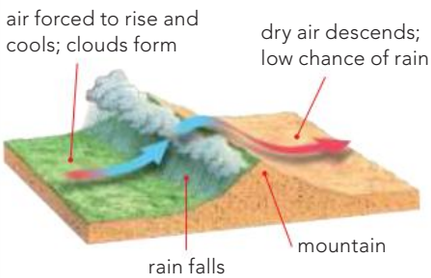
# Australia's weather and climate

Weather is the short-term changes in the atmosphere that we witness every day, while climate is a summary of the four main weather elements – temperature, precipitation, wind and humidity – for a location over a long period of time.

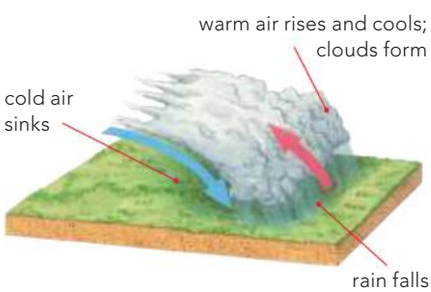
FAST FACTS

## Different types of rainfall

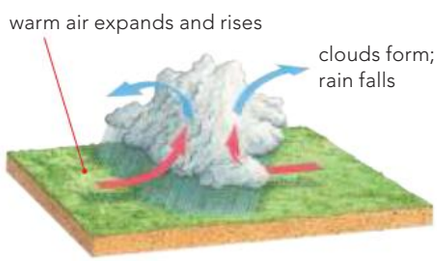
**Orographic rainfall** Air is forced to rise with increases in land height and it cools to the point of condensation producing rain. As the air begins to descend from the high land, it warms and creates dry regions.




**Frontal rainfall** The approaching cooler air mass wedges itself under the warmer air, forcing the warm air to rise, condense and produce rain along a distinct line.

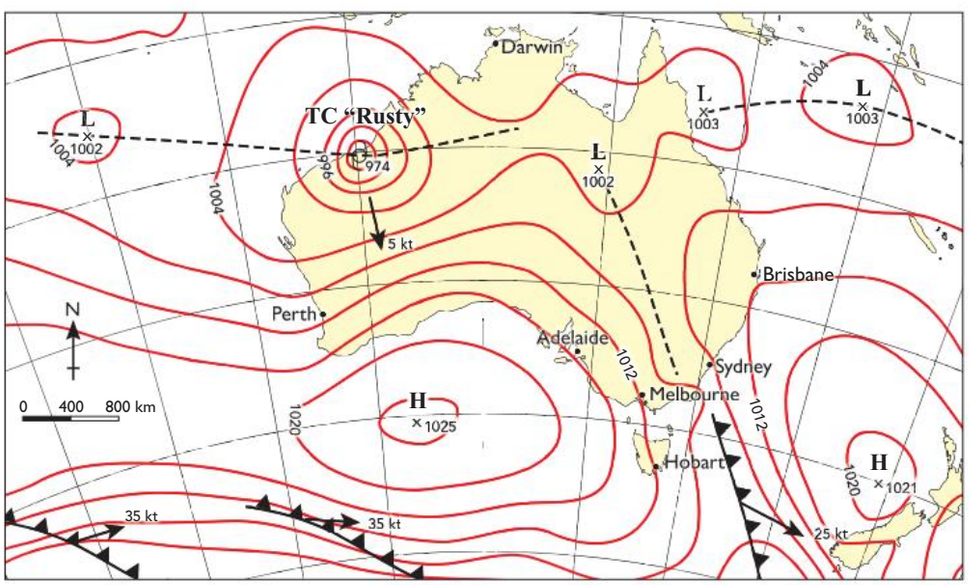



**Convectional rainfall** Temperatures during the day heat the land, and warm air rises rapidly to condense at high levels, producing heavy rain and thunderstorms.

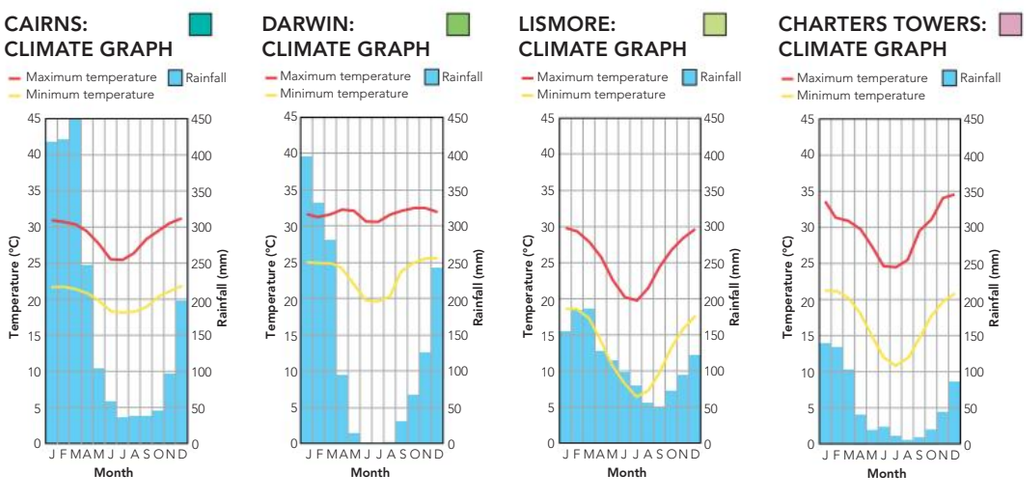




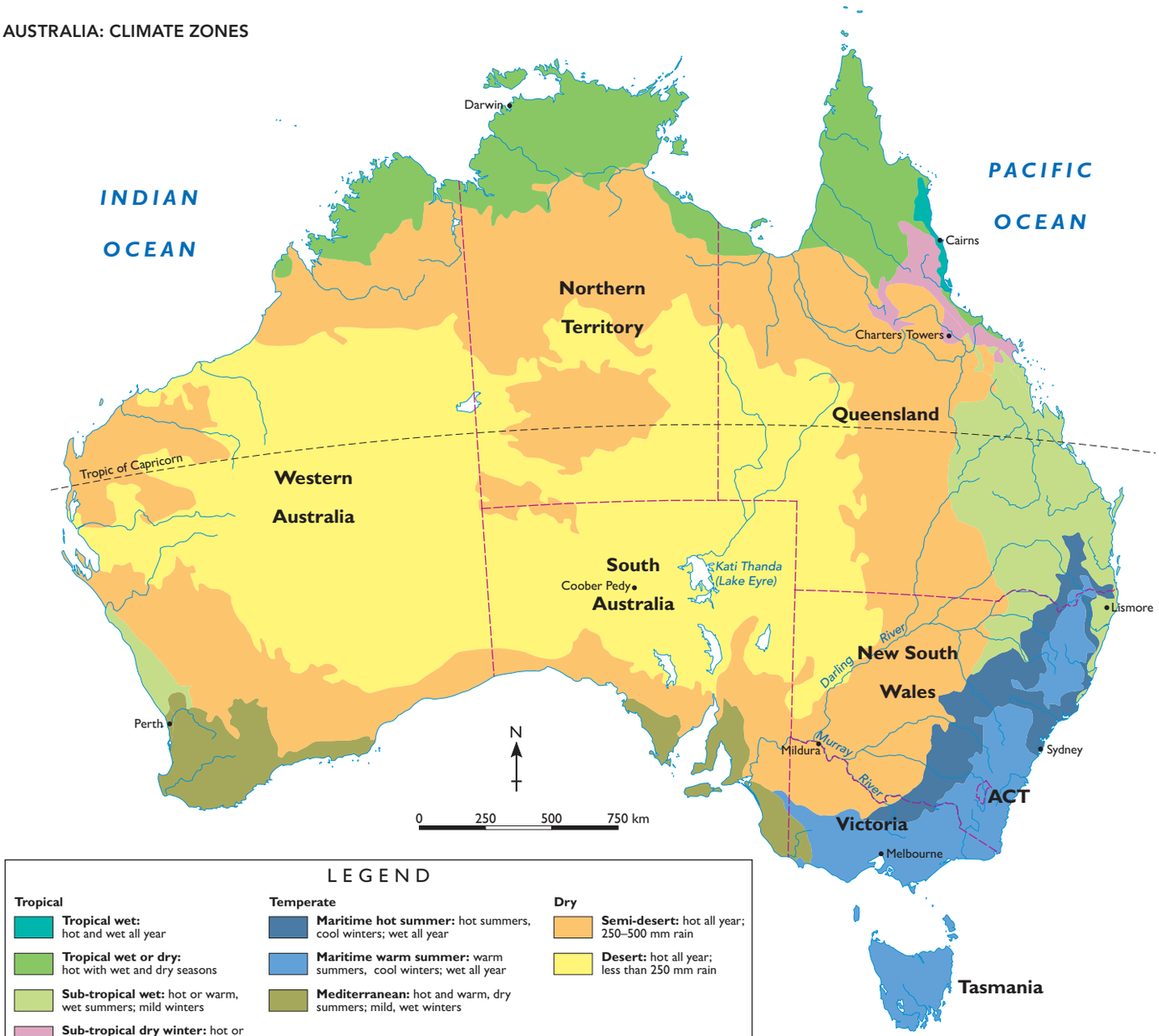
▲ Satellite image of Australia showing cloud on 28 February 2013




▲ Weather map showing the weather conditions for Australia on 28 February 2013



## AUSTRALIA: CLIMATE ZONES




### LEGEND

**Tropical**

- **Tropical wet:** hot and wet all year
- **Tropical wet or dry:** hot with wet and dry seasons
- **Sub-tropical wet:** hot or warm, wet summers; mild winters
- **Sub-tropical dry winter:** hot or warm, wet summers; dry winters

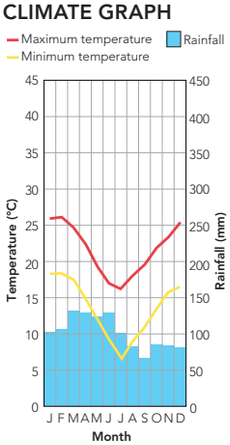
**Temperate**

- **Maritime hot summer:** hot summers, cool winters; wet all year
- **Maritime warm summer:** warm summers, cool winters; wet all year
- **Mediterranean:** hot and warm, dry summers; mild, wet winters

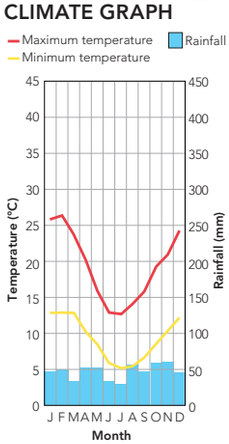
**Dry**

- **Semi-desert:** hot all year; 250–500 mm rain
- **Desert:** hot all year; less than 250 mm rain

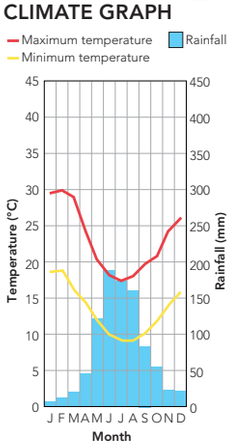
### SYDNEY: CLIMATE GRAPH



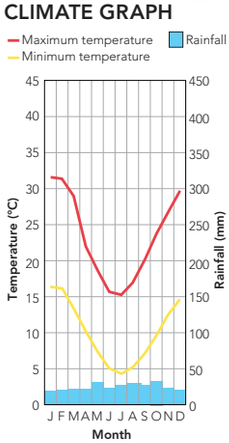

### MELBOURNE: CLIMATE GRAPH



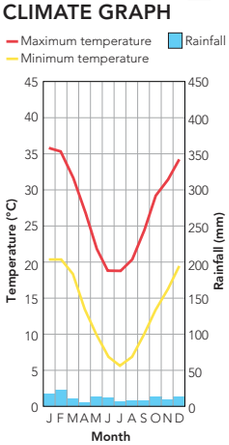

### PERTH: CLIMATE GRAPH




### MILDURA: CLIMATE GRAPH




### COOBER PEDY: CLIMATE GRAPH

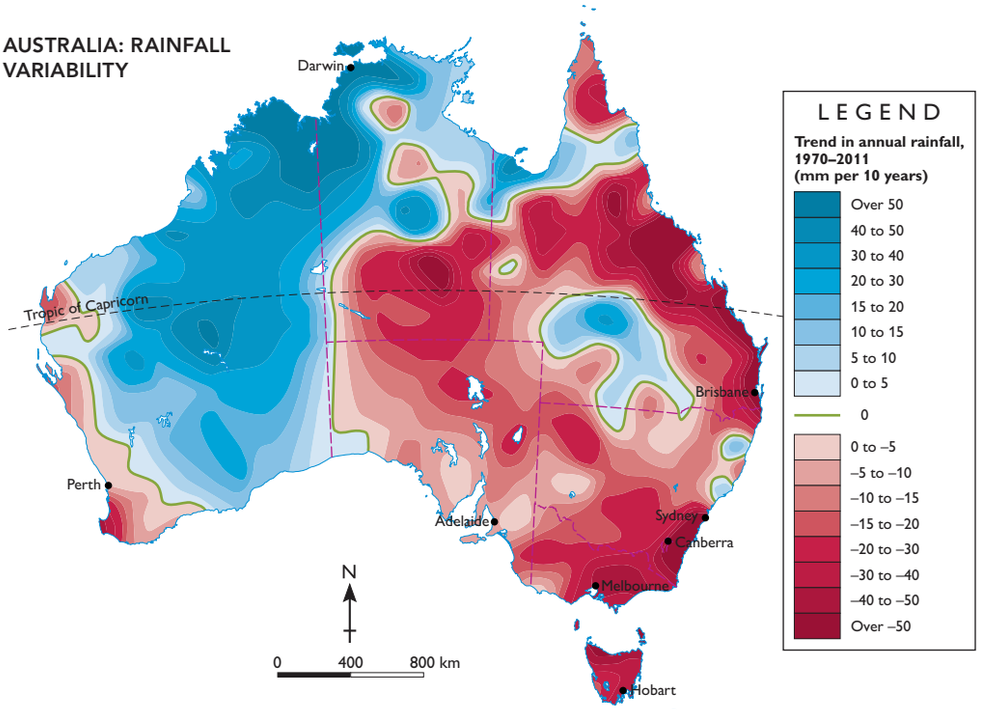


# Water availability and use in Australia

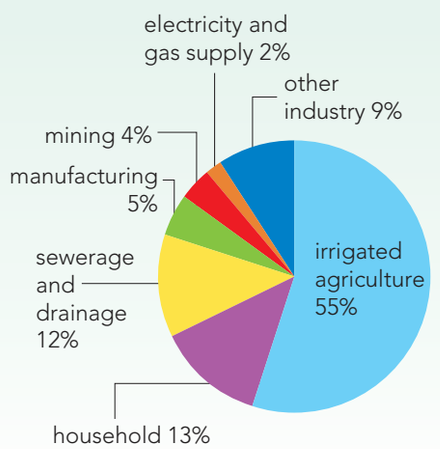
Australia has the lowest amount of water in rivers and the smallest areas of permanent wetlands in the world. In addition, water supplies are not evenly distributed. The northern third of the continent is water rich, while vast areas of the interior receive very little rain. Variable rainfall patterns make it quite common for one part of the country to experience flooding while others experience prolonged drought.

Population growth and drought have put enormous pressure on water resources in Australia. Dams have been constructed to store water and release it in times of need and pipelines carry water from areas with water surplus to areas that receive very little rainfall.

**AUSTRALIA: RAINFALL VARIABILITY**




**AUSTRALIA: FRESH WATER USE**




**AUSTRALIA: DRAINAGE DIVISIONS, RIVERS AND WATER STORAGES**


**Major rivers**

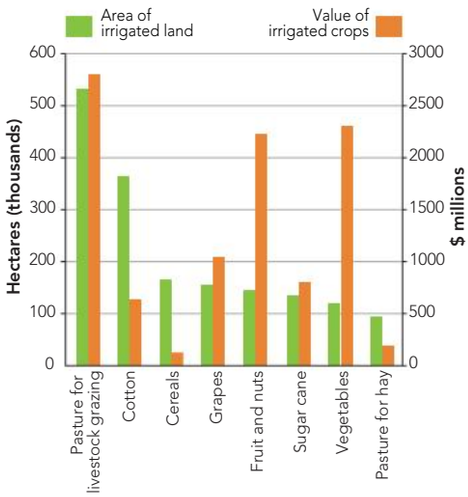
1 Murray
2 Darling
3 Murrumbidgee
4 Lachlan
5 Campaspe
6 Yarra
7 Goulburn
8 La Trobe
9 Ovens
10 Snowy
11 Derwent
12 Shoalhaven
13 Hunter
14 Macleay
15 Clarence
16 Bogan
17 Macquarie
18 Namoi
19 Barwon
20 Condamine
21 Warrego
22 Dawson
23 Fitzroy
24 Mackenzie
25 Isaac
26 Burdekin
27 Belyando
28 Mitchell
29 Alice
30 Jardine
31 Staaten
32 Flinders
33 Leichhardt
34 Nicholson
35 Roper
36 Wilton
37 Daly
38 Katherine
39 Victoria
40 Ord
41 Drysdale
42 Fitzroy
43 Margaret
44 De Grey
45 Fortescue
46 Ashburton
47 Gascoyne
48 Murchison
49 Swan/Avon
50 Blackwood
51 Cooper Creek
52 Barcoo
53 Thomson
54 Diamantina
55 Georgina
56 Finke
57 Palmer
58 Tweed

## Irrigated land

Farmers change water availability in a region by adding water to crops and pasture through irrigation. Currently, irrigated agriculture uses around 55 per cent of Australia's fresh water every year. Crops such as rice and fruit are particularly large users of irrigation water.

▲ Irrigation of farms is the greatest use of water in Australia.

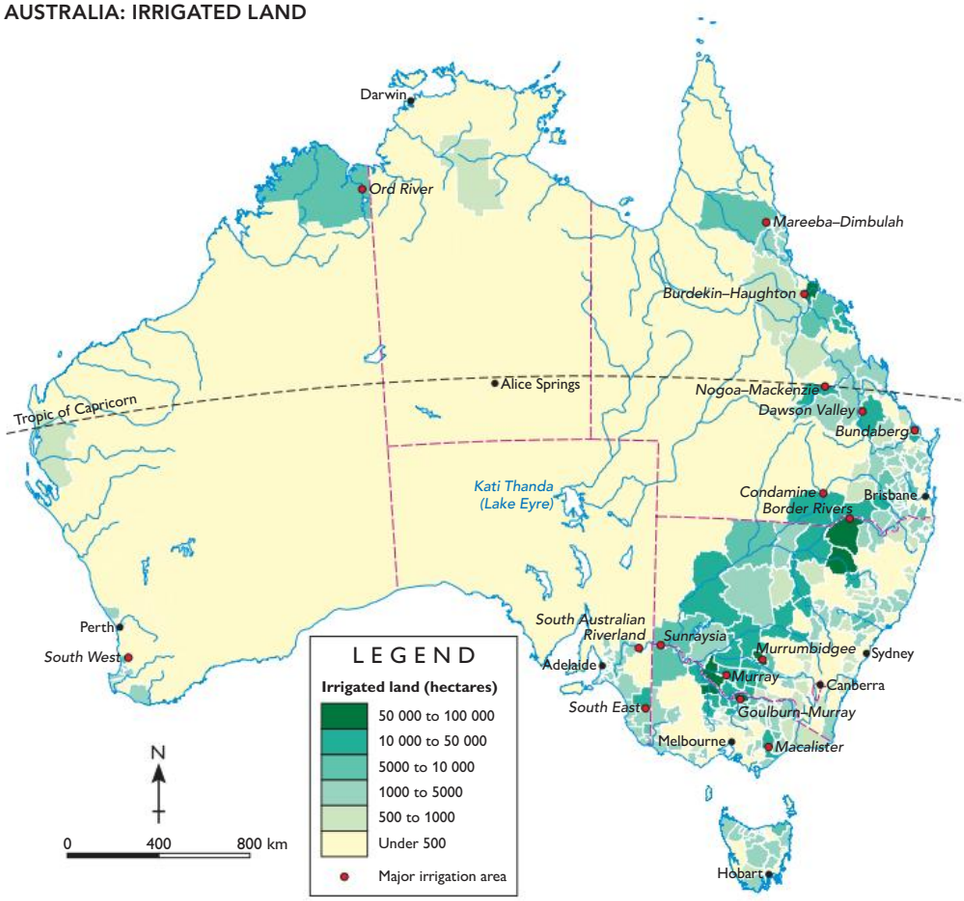
**AUSTRALIA: IRRIGATED AGRICULTURE (AREA AND VALUE)**




## The cultural value of water

Australia's Indigenous peoples have a deep spiritual and cultural connection with land and water. Each Aboriginal person belongs to a 'country' and through their strong connection to 'country' they take responsibility for the land, water, animals and plants found there. This forms the basis of both their respect and their aspiration for sustainable water resources. As more water has been stored in dams or diverted for irrigation and water supply, natural water resources have been threatened. It is important to involve Indigenous communities in the management of water resources to help maintain their cultural and spiritual links as well as their livelihoods, including hunting, fishing and plant collection.

**AUSTRALIA: IRRIGATED LAND**




▲ This Aboriginal woman is collecting plants for food from wetlands in the Daly River region of northern Australia.

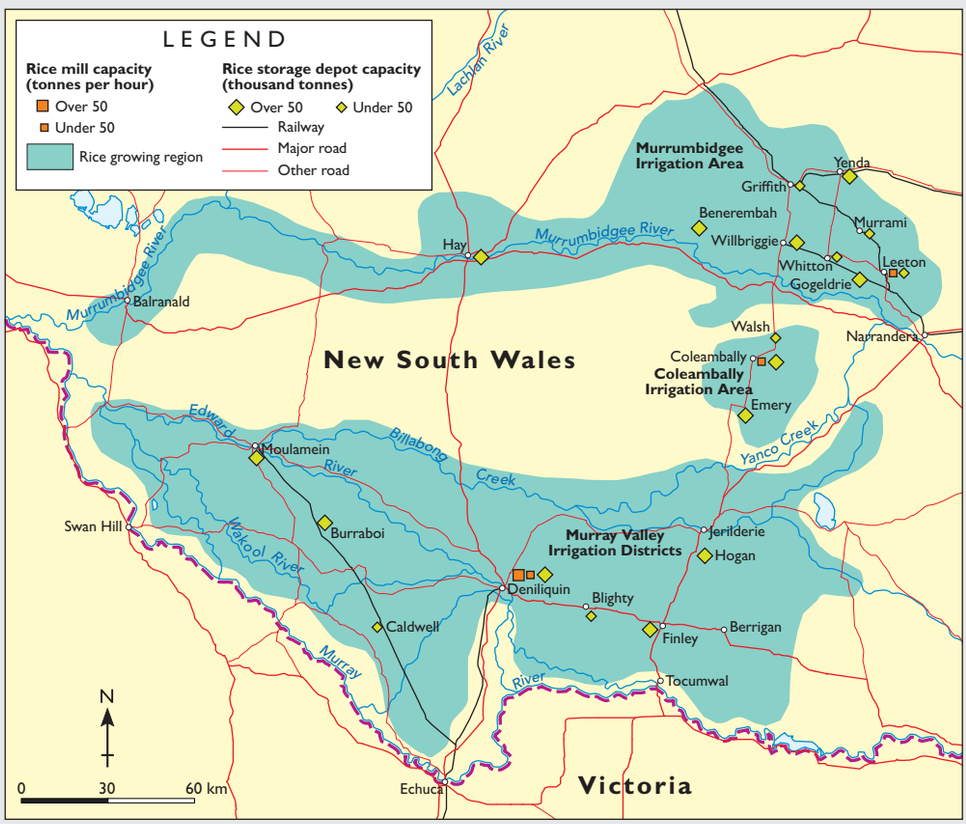
CASE STUDY

# Leeton: Rice farming in New South Wales

Nearly all of the rice produced in Australia is grown in New South Wales' Murrumbidgee, Coleambally and Murray Valley irrigation areas. Rice production uses more than 10 megalitres of water per hectare; more than any other major crop in Australia.

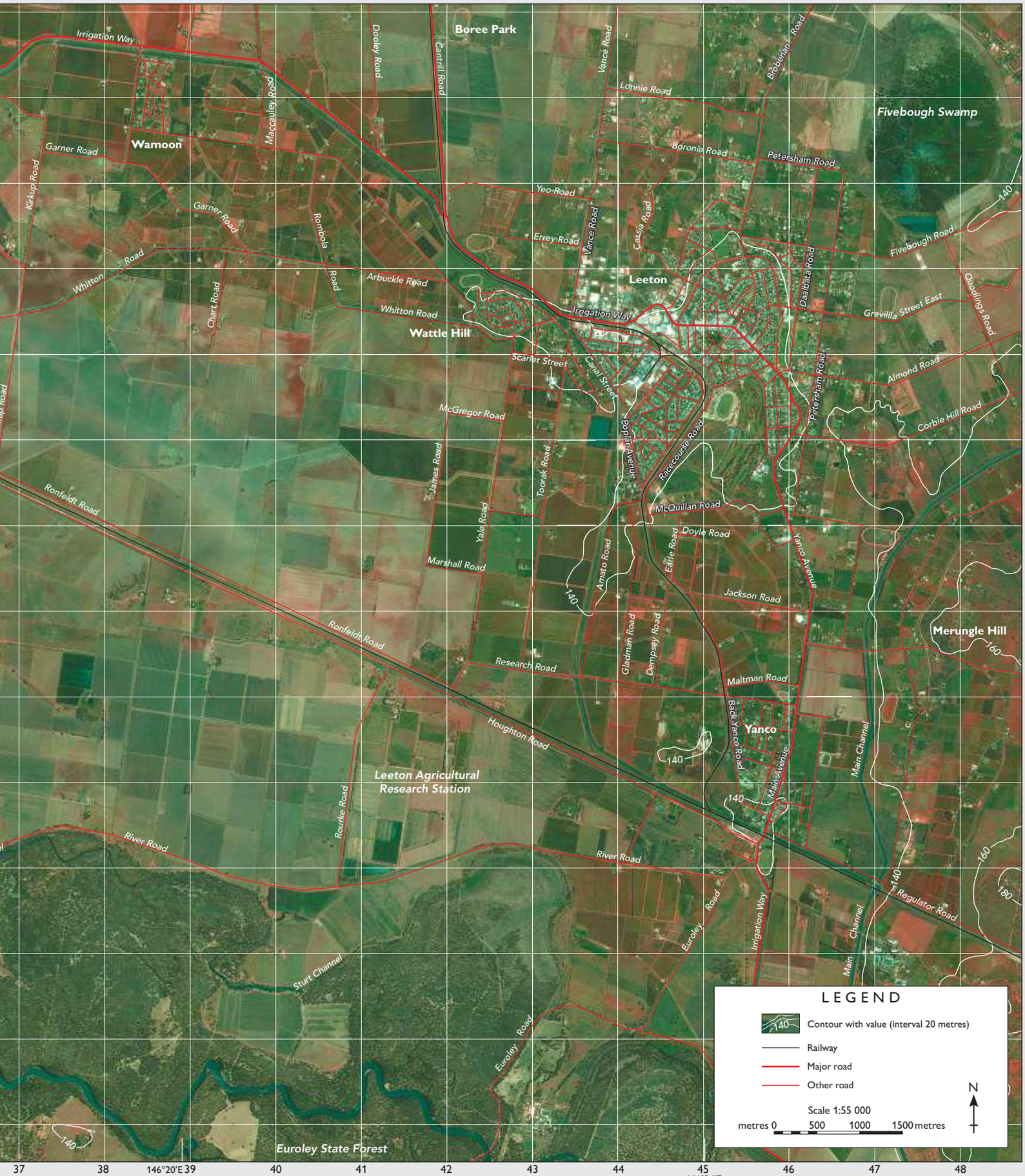
▲ Rice is a semi-aquatic plant that requires flood irrigation to grow. Farmers carefully grade their fields to minimise water wastage using lasers to ensure rice fields are as close to level as possible. Raised levees that follow the contours of the land and divide large fields into individual bays allow farmers to carefully control the flow of irrigation water.

## LEETON: RICE INDUSTRY FACILITIES




▲ Leeton (page 193, D2) is the headquarters of the Murrumbidgee Irrigation Area and Australia's rice industry. Soil on a farm needs to be approved for growing rice to ensure minimal seepage into the water table.

## LEETON AND SURROUNDS: PHOTOMAP


Irrigation Way
Boree Park
Dooley Road
Cantrill Road
Vance Road
Lonnie Road
Brobenah Road
Fivebough Swamp
Wamoon
Garner Road
Maccauley Road
Kirkup Road
Boronia Road
Petersham Road
Yeo Road
Errey Road
Cassia Road
Rombola Road
Fivebough Road
Whitton Road
Arbuckle Road
Chart Road
Leeton
Dalbata Road
Quodlings Road
Grevillia Street East
Wattle Hill
Scarlet Street
Canal Street
Almond Road
McGregor Road
Poplar Avenue
Racecourse Road
Corbie Hill Road
James Road
Toorak Road
Ronfeldt Road
McQuillan Road
Yale Road
Doyle Road
Earle Road
Yanco Avenue
Marshall Road
Amato Road
Jackson Road
Merungle Hill
Gladman Road
Dempsey Road
Research Road
Maltman Road
Back Yanco Road
Yanco
Houghton Road
Main Channel
Leeton Agricultural Research Station
Rourke Road
River Road
Regulator Road
Euroley Road
Irrigation Way
Main Channel
Sturt Channel
Euroley Road
Euroley State Forest
140
160
180
37
38
146°20'E
39
40
41
42
43
44
45
146°24'E
46
47
48
LEGEND
Contour with value (interval 20 metres)
Railway
Major road
Other road
N
Scale 1:55 000
metres 0 500 1000 1500 metres

# Water and weather hazards

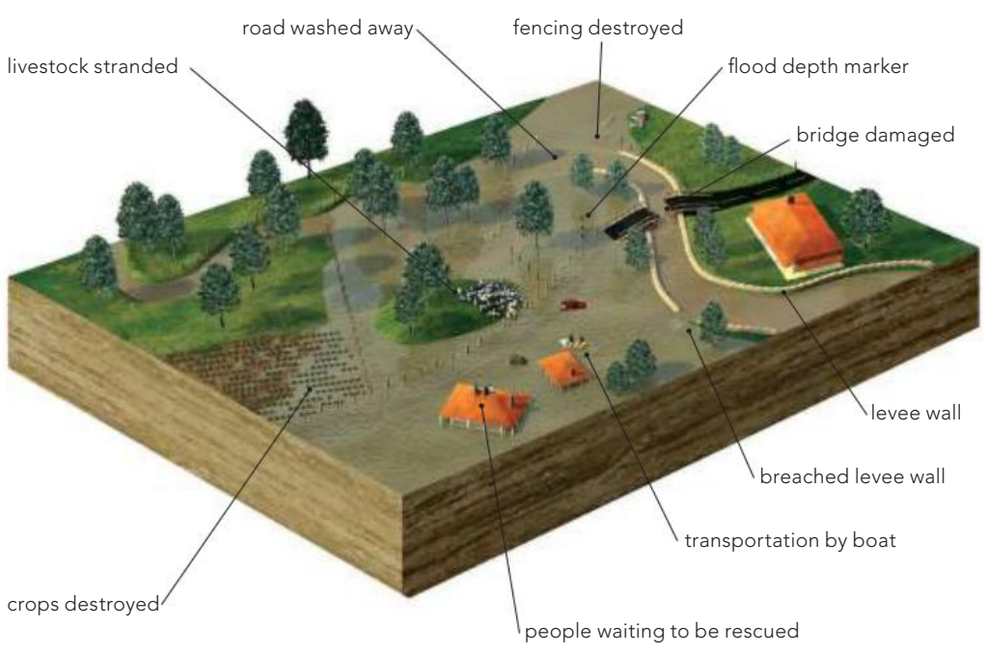
Natural hazards are natural events that have the potential to damage people, property or parts of the environment. They can be grouped according to the processes that cause them. Water hazards (also known as hydrological hazards) are hazards associated with water processes. They include floods, droughts and tsunamis. Weather hazards (also known as atmospheric hazards) are hazards caused by weather processes. They include tropical cyclones (called typhoons in Asia and hurricanes in the Americas), tornadoes, thunderstorms and snow storms (blizzards).

**WORLD: WATER AND WEATHER HAZARDS AND DISASTERS**


## Floods

Flooding usually occurs when rivers are forced to carry more water than they can hold. Heavy rain, sometimes caused by cyclones, can make a river break its banks and cover the surrounding land. Flooding can also result when seawater surges inland from a tsunami. The world's fertile and flat floodplains support billions of people, many of whom live with the constant threat of floods. Consequently, some floods have resulted in huge death tolls and are considered some of the worst natural disasters ever.

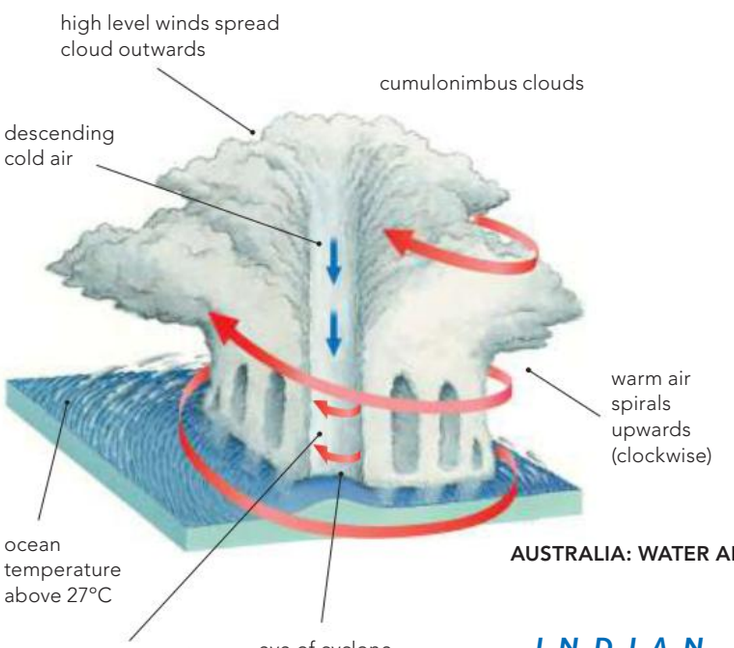
**HUMAN IMPACT OF RIVER FLOODING**



## Tropical cyclones

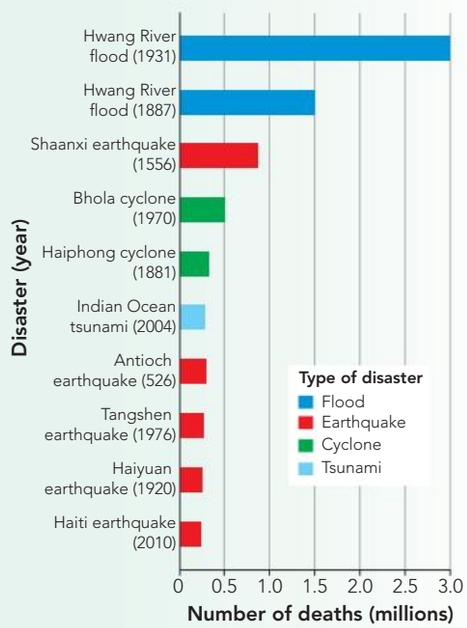
Tropical cyclones are the world's largest storms and often generate destructive winds and severe rain events. They only form over oceans with water temperatures greater than 27 degrees Celsius, mainly between latitudes 20°N and 20°S. The warm ocean heats the air above it causing the air to rise. Cool, dense air races across the ocean surface to replace the rising air. The Earth's rotation spins the rising air, creating a whirlpool of wind with a vacuum in the centre. This is known as the 'eye' of the tropical cyclone.

### TROPICAL CYCLONE: SOUTHERN HEMISPHERE

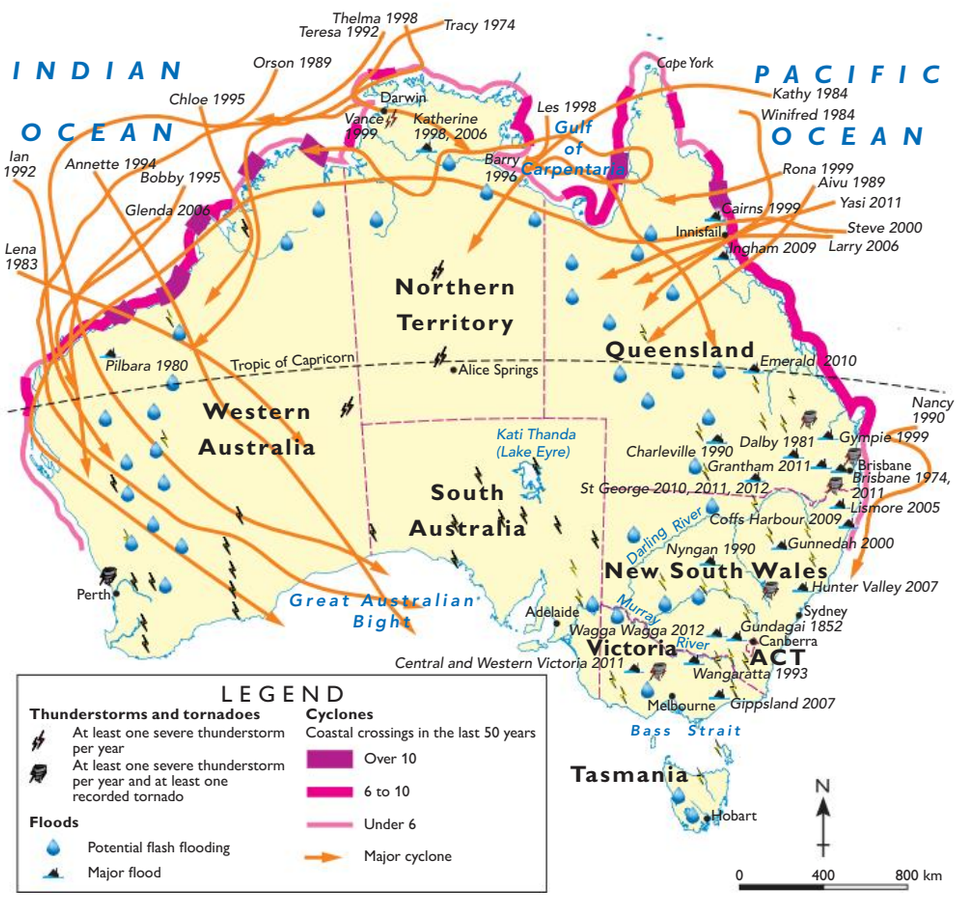



▲ Tropical Cyclone Yasi, one of the most powerful cyclones in Australia's history, crossed the north Queensland coast near Mission Beach on 31 January 2011. Yasi caused severe damage to buildings and crops, as well as widespread flooding.

### WORLD: 10 WORST DISASTERS




### AUSTRALIA: WATER AND WEATHER HAZARDS AND DISASTERS

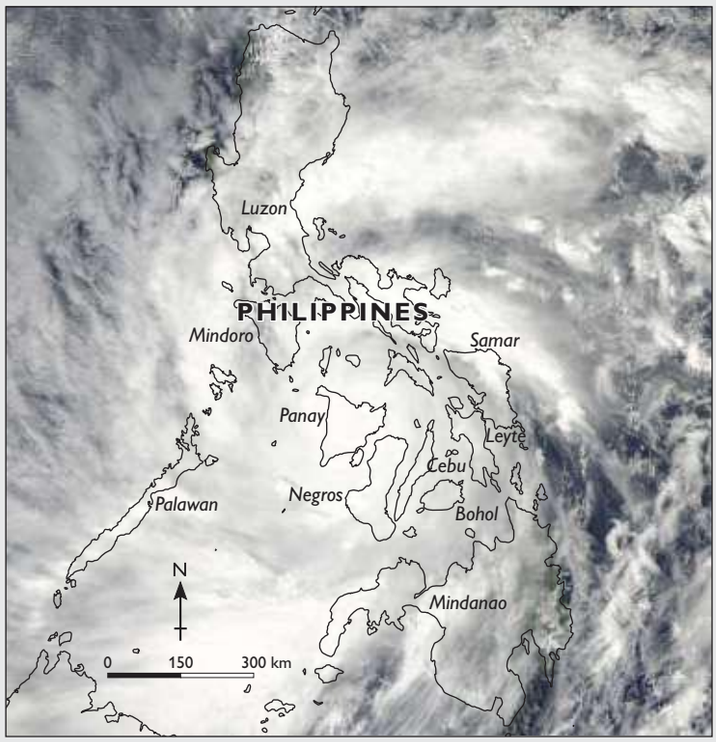


CASE STUDY

# Typhoon Haiyan: Destruction in the Philippines

In early November 2013, the central Philippines was hit by one of the largest and most powerful typhoons ever recorded. With wind speeds of 315 kilometres per hour and a storm surge of up to five metres, the typhoon tracked westwards across the Philippines devastating cities, villages and rural communities. More than 5000 people were killed and more than three million people were displaced from their homes. Over a million homes were destroyed or damaged, as were many roads, bridges, power stations and water supply systems.

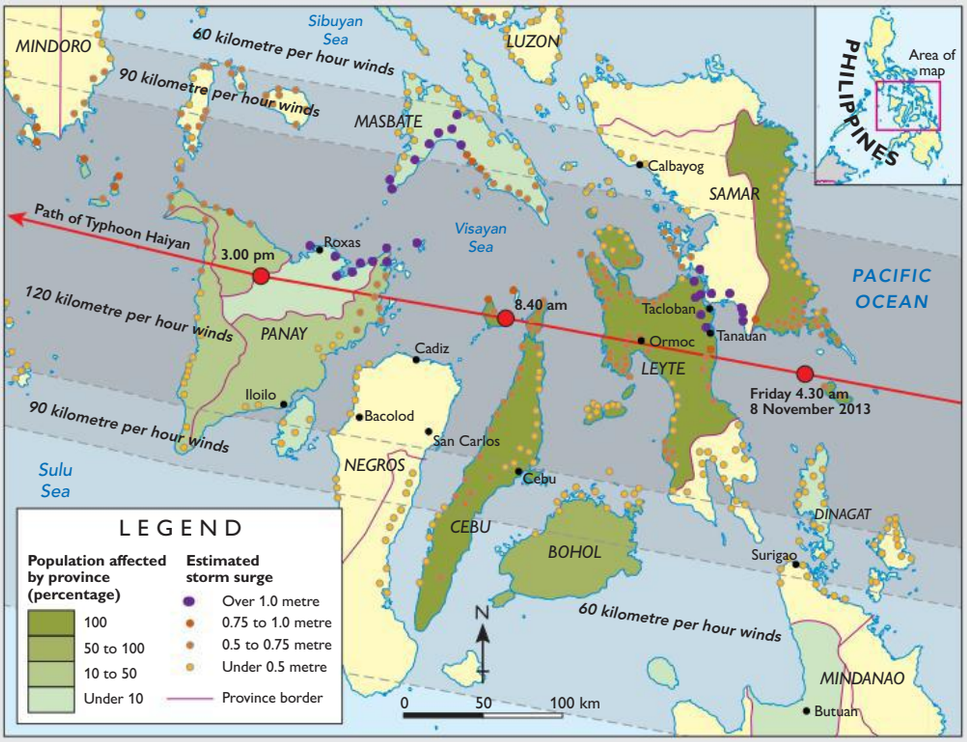

▲ Survivors desperately needed fresh water and food supplies after the typhoon passed. For many isolated communities, such as the small city of Tanauan, the only way to deliver these and other urgent supplies was by military helicopter.




▲ This image shows Typhoon Haiyan crossing the Philippines viewed from an orbiting NASA satellite.

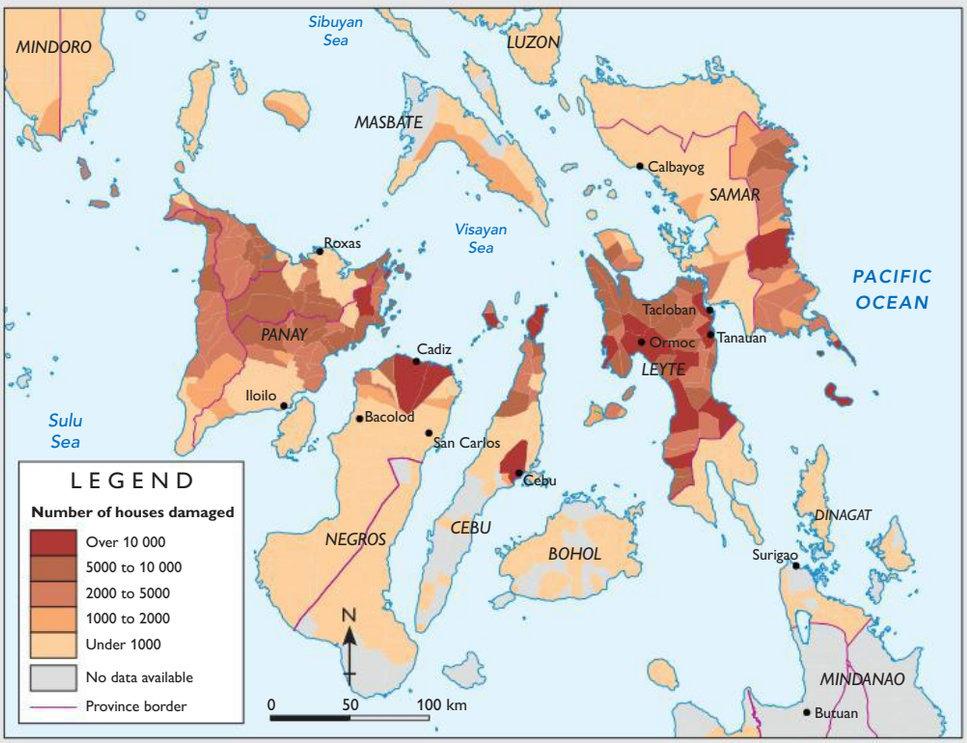
▲ Low air pressure and strong winds created a powerful storm surge, estimated to be as high as five metres in some places. Coastal communities, particularly those on small islands and low-lying peninsulas, were devastated by the surge of water. This small coastal town in Samar province was completely destroyed.

## PHILIPPINES: TYPHOON HAIYAN STORM TRACK



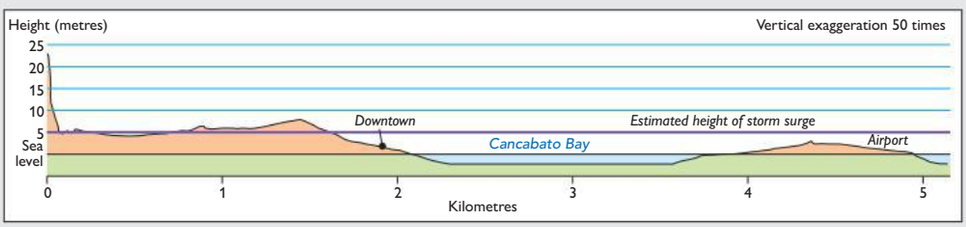

## TACLOBAN: 23 FEBRUARY 2012


## PHILIPPINES: HOUSES DAMAGED BY TYPHOON HAIYAN




## TACLOBAN: 10 NOVEMBER 2013


## TACLOBAN: CROSS-SECTION




▲ Tacloban, a city of more than 200 000 people, is located on the eastern island of Leyte. It was exposed to the full force of Typhoon Haiyan and a five-metre storm surge. The destruction was so severe that the mayor declared a 'state of calamity'.

# Liveability of countries and cities

## MOST LIVEABLE CITIES

1 Melbourne, Australia

2 Vienna, Austria

3 Vancouver, Canada

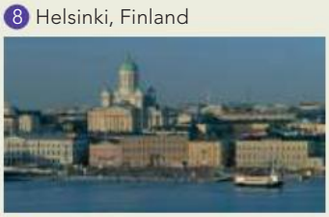
4 Toronto, Canada

5 Calgary, Canada

6 Adelaide, Australia

7 Sydney, Australia

8 Helsinki, Finland



9 Perth, Australia

10 Auckland, New Zealand

Source: EIU, 2012

## Measuring liveability

Liveability is measure of what it is like to live in a place according to particular criteria such as access to schools and health care, climate, safety and infrastructure. Each year, a number of different companies review the liveability of cities around the world, ranking them from most liveable to least liveable. One of the most well known of these surveys is conducted by the Economist Intelligence Unit (EIU), which publishes an annual list of rankings.

### WORLD: MOST LIVEABLE AND LEAST LIVEABLE COUNTRIES AND CITIES


### WORLD: SAFEST AND MOST DANGEROUS COUNTRIES AND CITIES


### WORLD: BEST AND WORST HEALTH CARE COUNTRIES AND CITIES

The EIU gives each city a score based on: stability (such as crime and terrorist threats); health care; environment and culture (such as climate, shopping and religious freedom); education; and infrastructure (such as public transport, roads, water and electricity). Melbourne was rated the world's most liveable city in 2011 and 2012. It ranked equal first in health care, education and infrastructure. Dhaka was rated the world's least liveable city in 2012. Its infrastructure was rated the worst in the world.

## LEAST LIVEABLE CITIES

1 Dhaka, Bangladesh

2 Port Moresby, Papua New Guinea

3 Lagos, Nigeria

4 Harare, Zimbabwe

5 Karachi, Pakistan

6 Algiers, Algeria

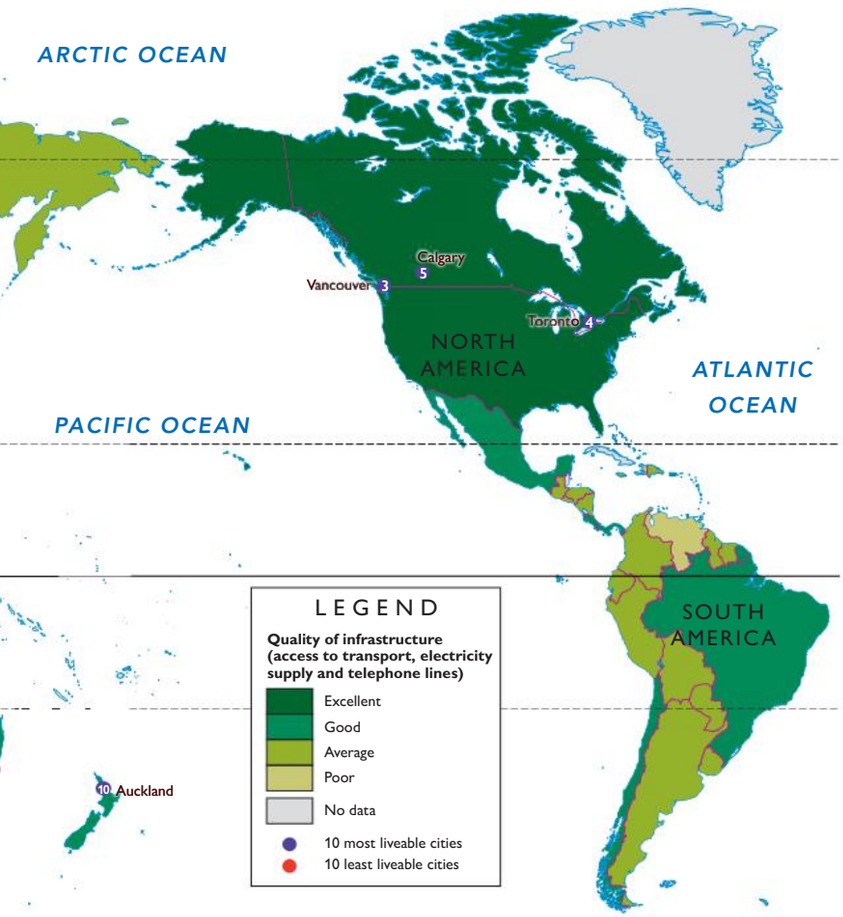
7 Tripoli, Libya

8 Douala, Cameroon

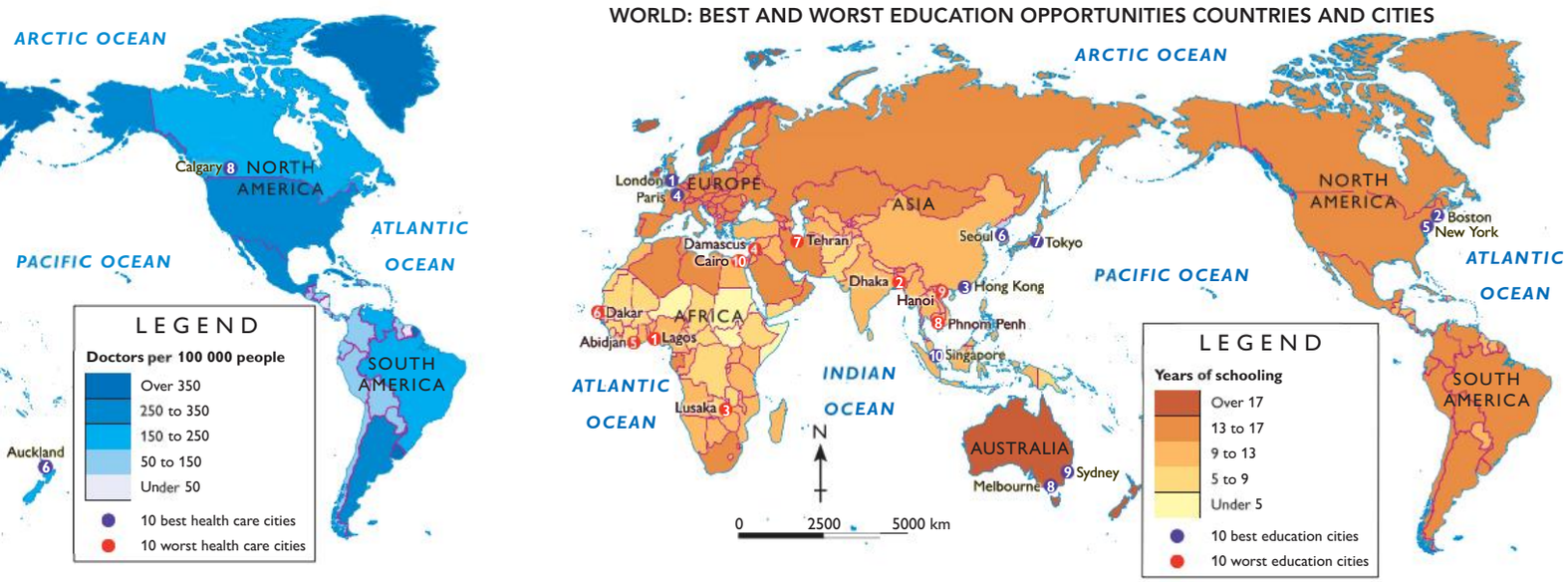
9 Tehran, Iran

10 Abidjan, Ivory Coast

Source: EIU, 2012




## WORLD: BEST AND WORST EDUCATION OPPORTUNITIES COUNTRIES AND CITIES



CASE STUDY

# Melbourne: The world's most liveable city

In 2012, Melbourne was rated the world's most liveable city. Adelaide, Sydney and Perth were also ranked in the top 10 cities. The ranking scores 140 cities on 30 factors relating to stability, health care, culture and environment, education and infrastructure. Cities that are judged the most liveable are usually medium sized and located in countries with low population densities. They are characterised by low crime rates, a high standard of infrastructure that is not pressured by population and accessible recreational facilities.

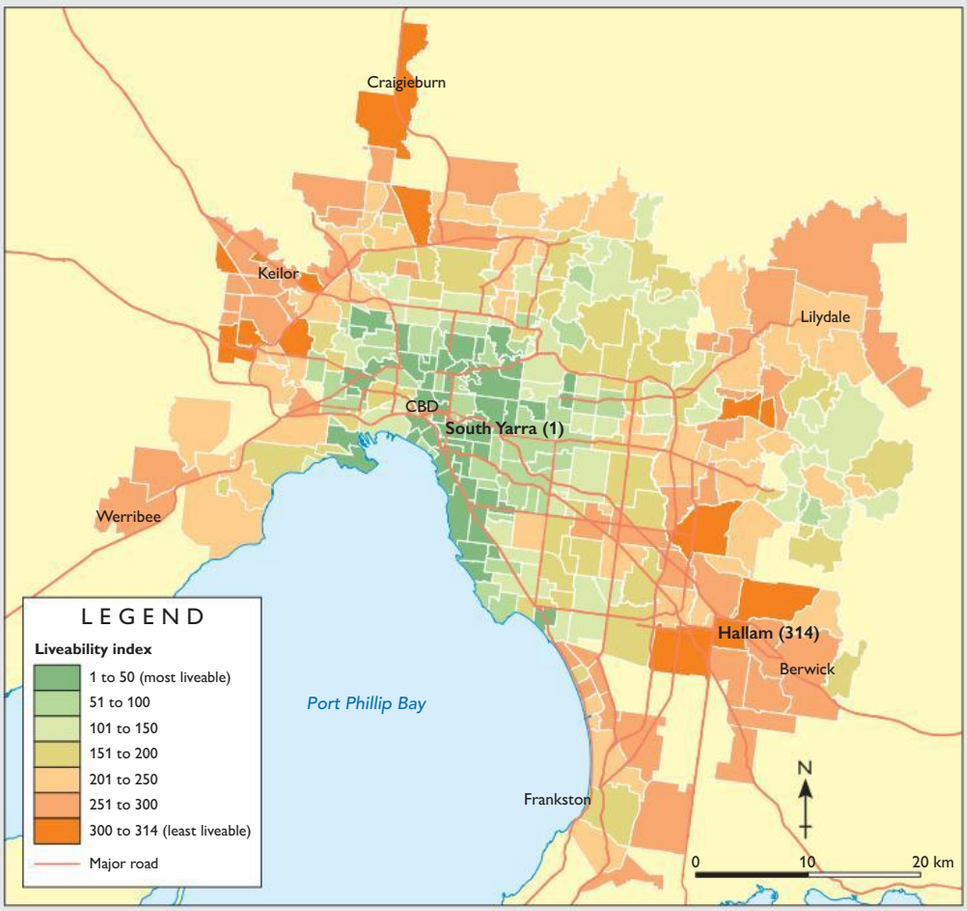
## Liveable suburbs

A survey of the most liveable suburbs in Melbourne by *The Age* newspaper was based on the following criteria:

- access to public transport, parks, schools and shops
- open space
- traffic congestion
- crime.

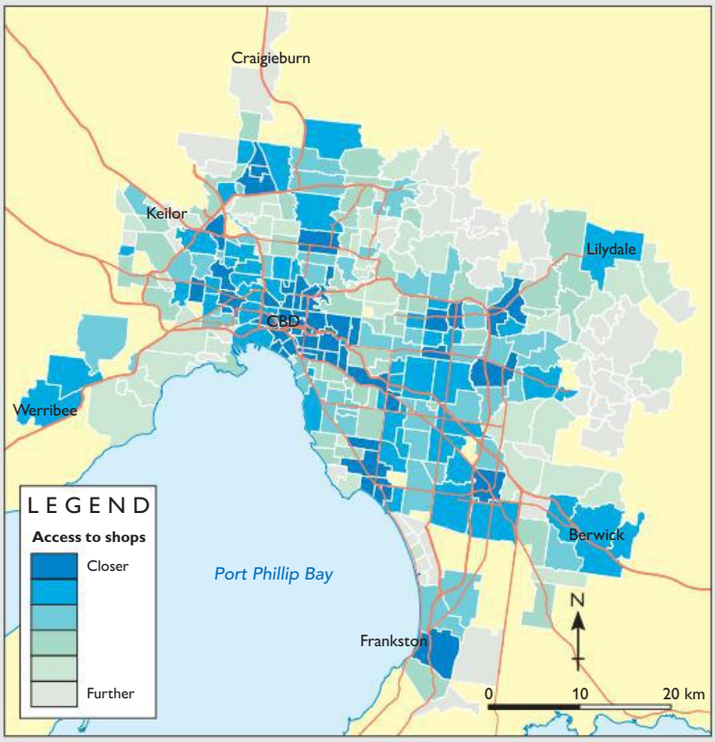
South Yarra, with good access to services, was ranked as Melbourne's most liveable suburb. Hallam, with poor access to services, was ranked as Melbourne's least liveable suburb in 2012.

**MELBOURNE: LIVEABILITY INDEX**

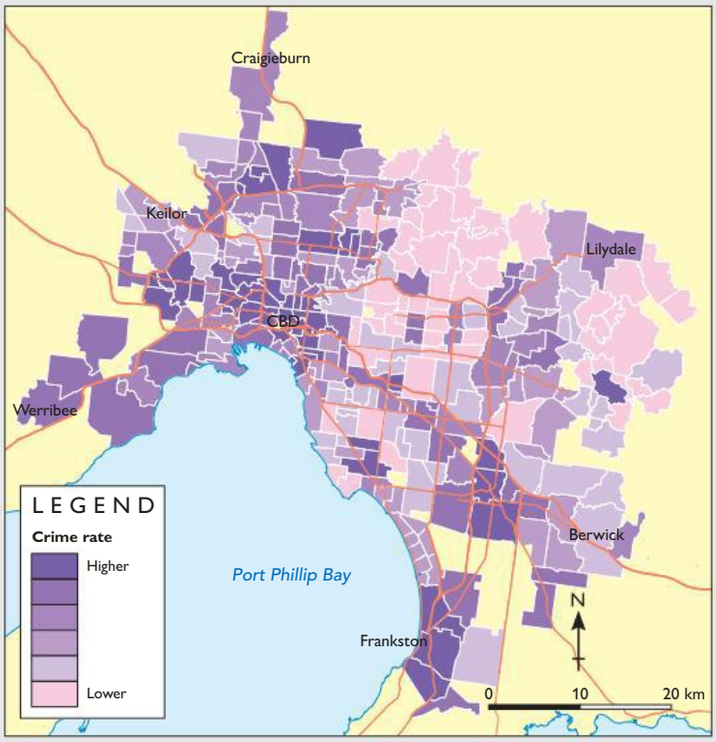



▼ An oblique aerial view of Melbourne's Central Business District

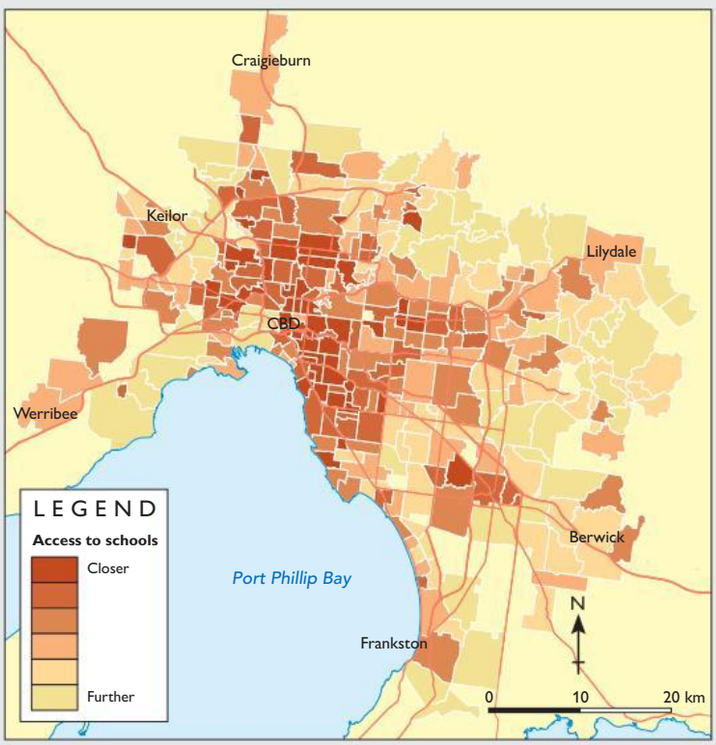
MELBOURNE: ACCESS TO SHOPS



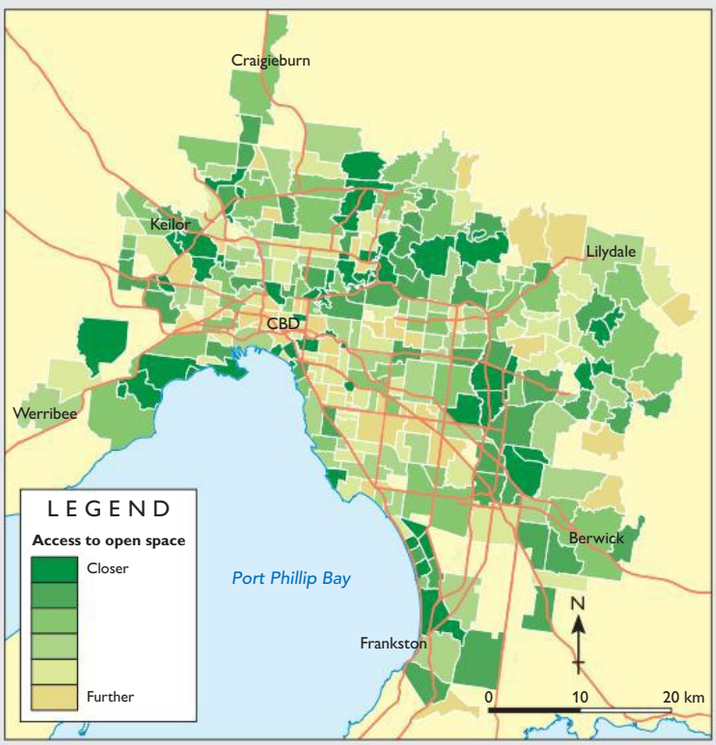

MELBOURNE: CRIME RATE




MELBOURNE: ACCESS TO SCHOOLS




MELBOURNE: ACCESS TO OPEN SPACE

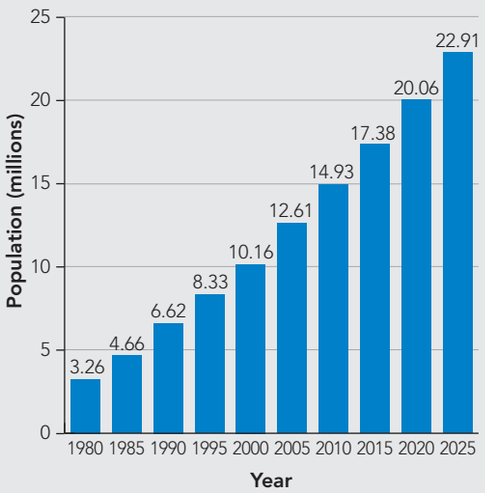


CASE STUDY

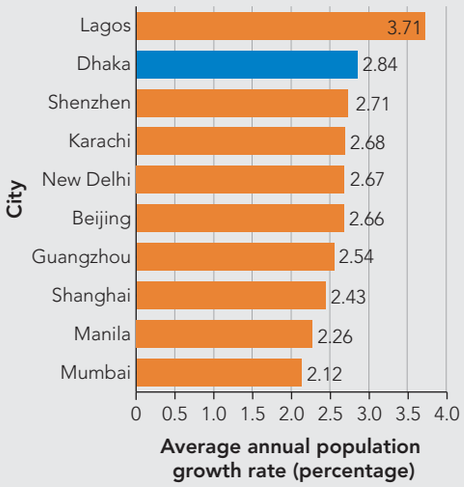
# Dhaka: The world's least liveable city

Dhaka is the capital city of flood-prone Bangladesh. This megacity (a city with a population of more than 10 million) is home to 16 million people. It is one of the largest, fastest growing and most densely populated cities in the world. In 2012, Dhaka was rated the least liveable city on Earth. It was judged to have the worst infrastructure and the second worst health care of the 140 cities surveyed. Rapid population growth has made Dhaka a very difficult city to live in. Traffic congestion and smoke from brick kilns combine to create air pollution that is on average five times higher than the acceptable limit. High prices for goods, increasing crime rates and poor health services have all contributed to reduced liveability in Dhaka.

**DHAKA: POPULATION GROWTH**



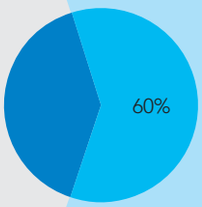

**WORLD: TOP 10 POPULATION GROWTH RATES BY CITY**




▲ Traffic congestion in Dhaka is extreme. In 2010, the city's air pollution (the density of airborne particulate matter) reached the highest levels ever recorded in the world.

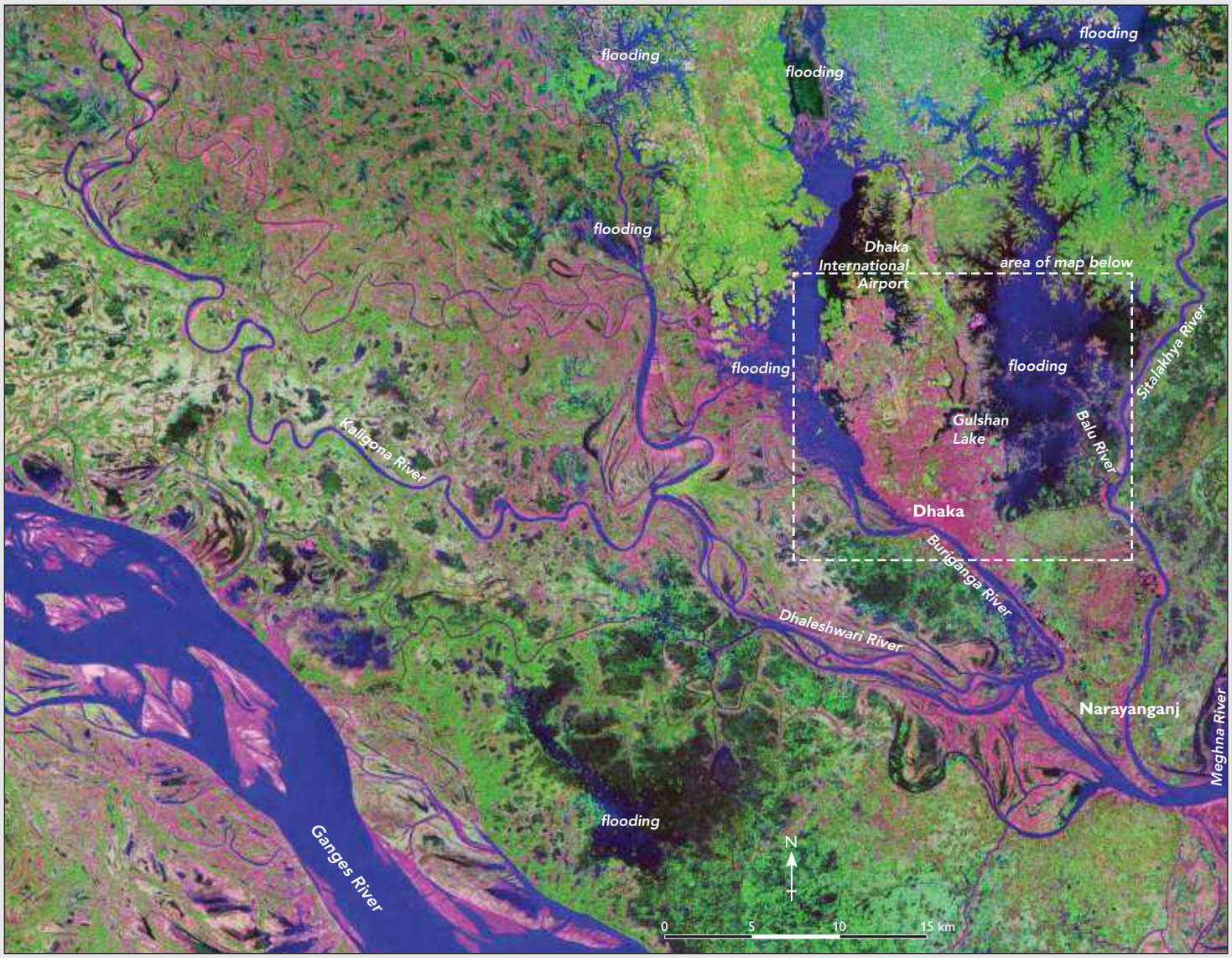
**DHAKA: SLUM POPULATION**

It is estimated that nearly 60% of Dhaka's population (9.6 million people) live in slums.



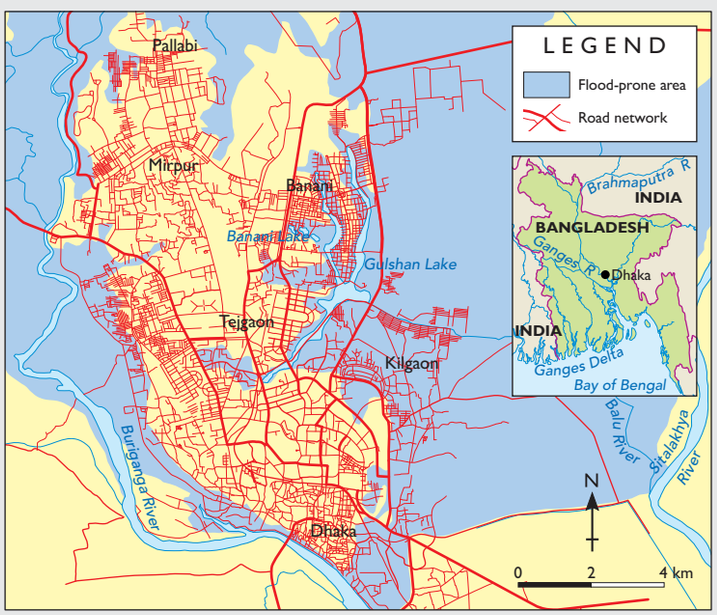

- 10% of houses are concrete. 90% of houses are made from bamboo, bags and scrap metal.
- 92% of people do not earn enough to meet their basic needs.
- 60% of children are malnourished.
- 63% of people do not have access to safe water.
- 90% of people share toilets.
- 18% of children attend school. 20% of all children aged 5 to 14 years work.

About 300 000 to 400 000 migrants, most of them poor, move to Dhaka each year. The city's sprawling slums struggle to accommodate millions of new residents. ►




▲ This false-colour satellite image of Bangladesh shows the densely populated capital city of Dhaka in the centre right of the image (the urban area is coloured dark pink). Water is dark blue and farmland bright green and pale pink.

**DHAKA: FLOOD-PRONE AREAS**




▲ Transporting people through floodwaters in Dhaka.

CASE STUDY

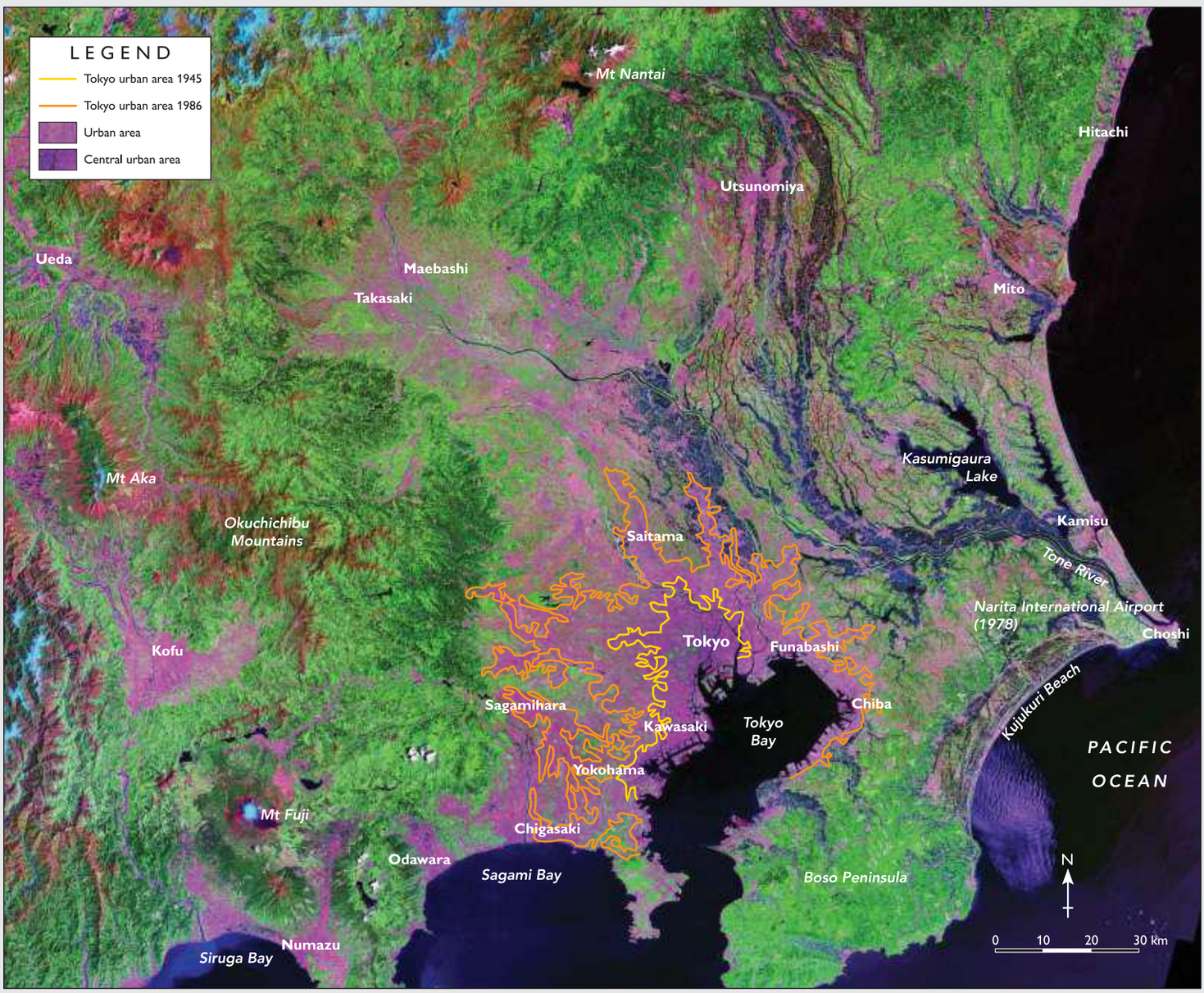
# Tokyo: Asia's liveable megacity

▲ Skyscrapers in Tokyo's Shinjuku District with Mount Fuji in the background

The world's largest city, Tokyo, has a population in excess of 35 million. Despite its enormous population, this megacity (a city with a population of more than 10 million) was ranked the 18th most liveable city in the world in 2012. Over the last century, Tokyo has grown so large that its metropolitan area has merged with Chiba, Kawasaki, Saitama and Yokohama to form a 13 500-square-kilometre conurbation (a very large urban area).

A high percentage of public transport users and the location of industries outside the city area are two important factors that contribute to Tokyo's very low pollution levels. Tokyo is also one of the world's most densely populated cities. The average size of a home is only 63 square metres – land is not only rare, but also very valuable. In the centre of the city, a square metre of floor space sells for over $300 000. The Japanese have responded to this challenge by building taller buildings. They have also used urban waste and silt from the bottom of Tokyo Bay to create new, flat land around the edge of Tokyo Bay. Despite the high cost of land in Tokyo, more than one-third of the metropolitan area has been set aside as parkland.

▼ False-colour satellite image of Tokyo and surrounding region

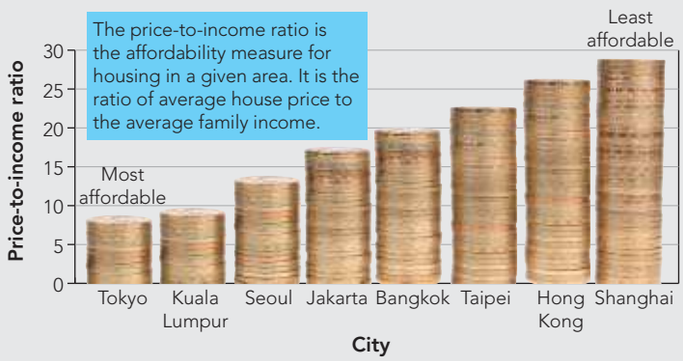


▲ Shiodome, a new residential and commercial district of Tokyo has been built on what was formerly marshland surrounding Tokyo Bay.

## Measuring housing affordability

Rapid population growth in Asian cities has led to an increased need for affordable housing. Housing affordability can be calculated using objective measures such as income and house prices. House prices in Tokyo are the most expensive in Asia. However, the average annual income per person in Tokyo is also the highest in Asia. Therefore, the cost of an average condominium is 8.4 times the average annual income. Although the price of housing is high in Tokyo, the ability for the average family to afford a condominium is much better than in cities such as Shanghai in China, where the cost of a condominium is 28.6 times the average annual family income.

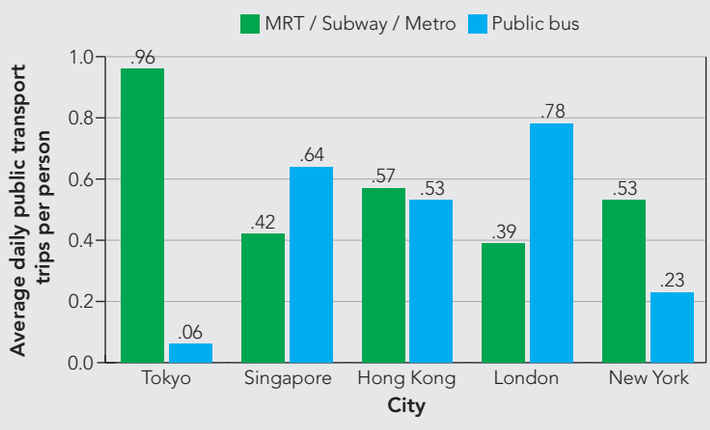
**SELECTED ASIAN CITIES: HOUSING AFFORDABILITY**




## Measuring access to transport

Tokyo's railway network is the world's largest. It can be measured easily by objective factors – the network stages 40 million daily trips on 2578 kilometres of track. Around 57 per cent of all Tokyo residents use rail as their primary means of transport. There are also subjective factors (people's beliefs or views) that influence the measurement of the rail network in Tokyo. Newspapers, blogs and YouTube videos show that the Tokyo train system is very crowded. Congestion in the system is so great that railway operators employ 'oshiya' who push as many people as possible into overcrowded trains during peak hours.

**SELECTED CITIES: PUBLIC TRANSPORT USAGE**




▲ 'Oshiya' cram passengers into a rail carriage on a Tokyo station.

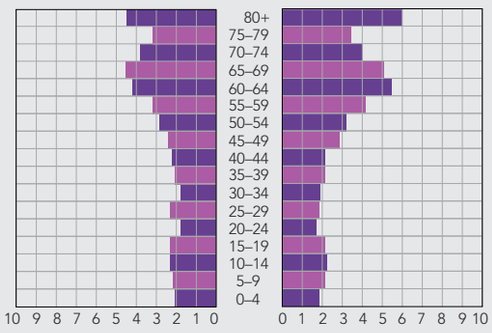
CASE STUDY

# Victor Harbor: A liveable community

Victor Harbor, located on the South Australian coast, is home to Australia's oldest community. In the 2011 Census, 35.7 per cent of Victor Harbor's population was 65 years or older, compared to the Australian average of 14 per cent. Victor Harbor has become a sea change (the movement of people from cities to rural coastal communities) location for thousands of retirees. Community facilities and events are adapting to the ageing profile of the population to provide opportunities for social connectedness. The ability to feel safe and to engage in community activities is important when considering the liveability of communities. Elderly residents can feel isolated when they move away from family and friends to sea change locations. They are also more likely to be widowed and in need of reconnecting with the community.

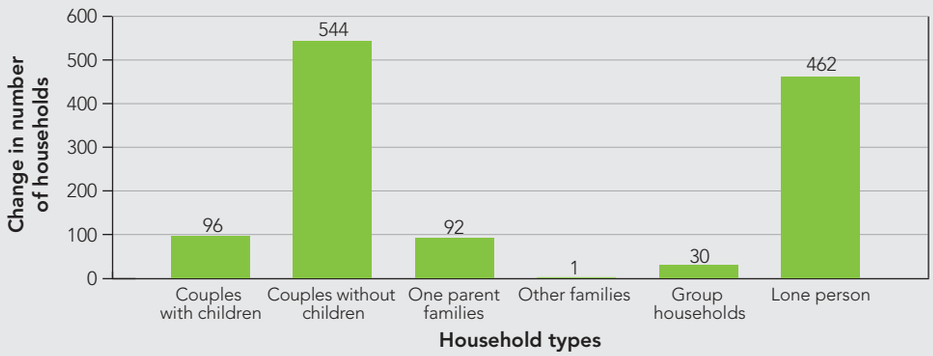
Walking along Yilni Beach, C2

### VICTOR HARBOR: POPULATION PYRAMID

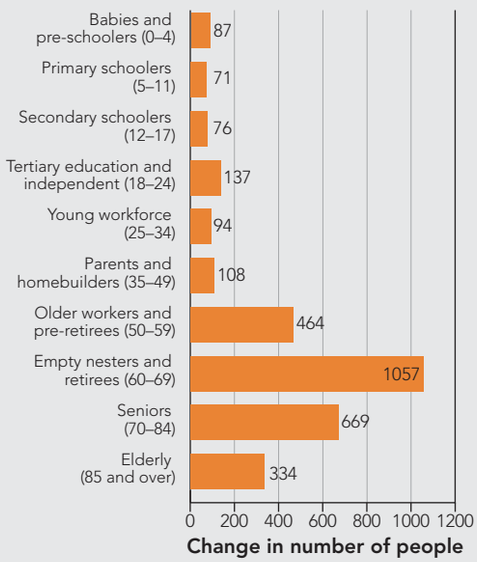



### VICTOR HARBOR AND SURROUNDS: TOURIST MAP

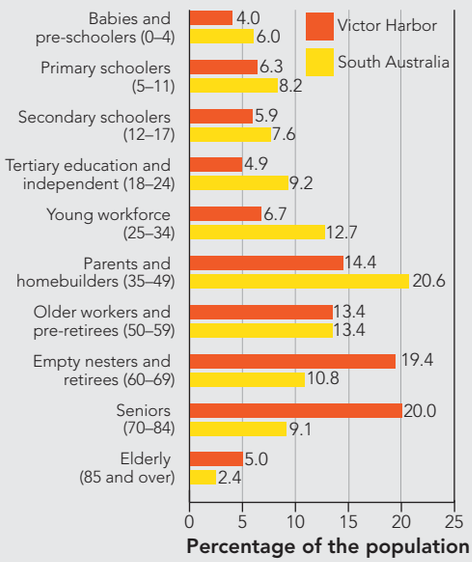

### VICTOR HARBOR: CHANGE IN HOUSEHOLD TYPES, 2001 TO 2011




### VICTOR HARBOR: CHANGE IN AGE STRUCTURE, 2001 TO 2011




### VICTOR HARBOR AND SOUTH AUSTRALIA: AGE STRUCTURE



▲ Chiton Retirement Village, I4

▲ Probus meetings are held every month, E3

▲ Victor Harbor Bowling Club, E3

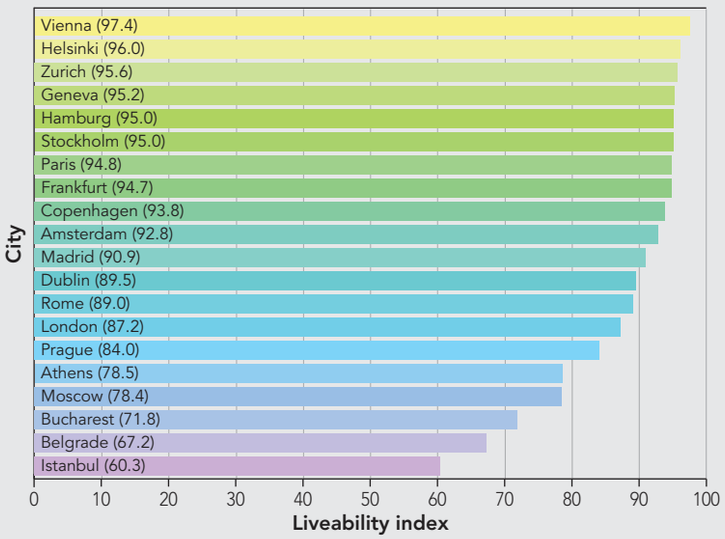
CASE STUDY

# Europe: Strategies to improve liveability

Two-thirds of the world's population will live in cities by 2050. By improving our understanding of cities and the needs of their people, we can identify ways to enhance liveability. Planners use a number of strategies to increase levels of liveability and sustainability in cities. These include initiating improvements to housing, electricity, communications, transport, open space, health and safety.

Eight of the 20 most liveable cities in the world are located in Europe. Many European cities are taking strong action to improve liveability by reducing pollution, protecting historic neighbourhoods, expanding pedestrian and bike zones, and making cities more sustainable.

**SELECTED EUROPEAN CITIES: LIVEABILITY INDEX**




## Housing and infrastructure

The provision of safe, accessible and sustainable housing improves liveability for city dwellers. A clean environment and access to services such as electricity and telecommunications are also important when considering liveability.

### Copenhagen – a sustainable city

Over 20 per cent of Denmark's energy comes from renewable sources. This figure is expected to increase to 100 per cent by 2050. In Copenhagen, all new buildings with roof slopes less than 30 degrees must incorporate vegetation into their designs as part of the 'Green Roof Policy'. Small parks are being installed around the city so that by 2015 around 90 per cent of all residents will be within a 15-minute walk to a green space.

▲ Copenhagen's 'Green Roof Policy' will help cool the city, reduce water runoff, attract wildlife and create more liveable environments for residents.

▲ Helsinki, Finland's capital, is the world's safest city and one of the most liveable cities overall.

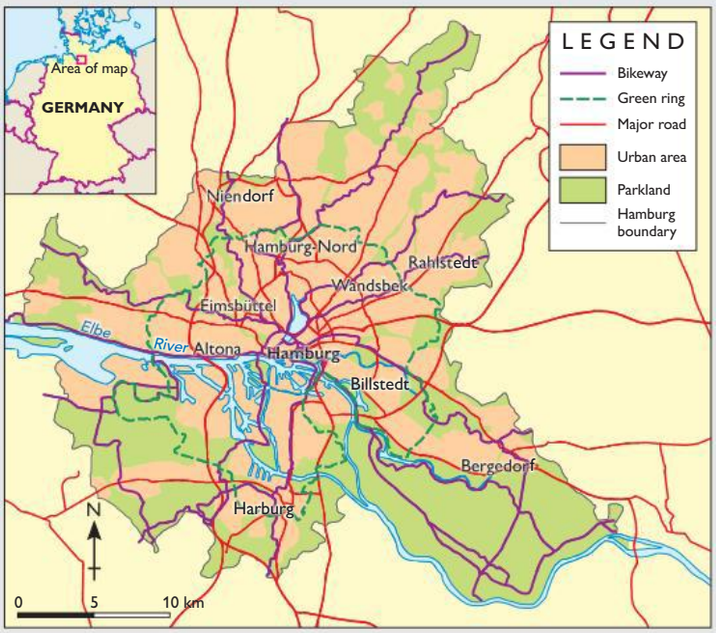
## Public environment, facilities and activities

Social connectedness is an important element of community life. Liveable cities provide public spaces and facilities for people to get together and interact. In addition, activities such as celebrations and festivals give community members an opportunity to socialise.

### Hamburg – a green city

Despite being Germany's second largest city and the third largest port in Europe, Hamburg is one of the most environmentally friendly cities in the world. Green spaces, parks, woodlands and nature reserves make up nearly 17 per cent of the urban area. In 2011, Hamburg was named European 'Green Capital'.

**HAMBURG: GREEN NETWORK**




▲ A green network of parkland radiates from the centre of Hamburg, enabling people to walk and cycle to the outskirts of the city without traffic. The connected corridors of green also allow wildlife to move freely from one place to another.

▲ Hamburg is one of Europe's greenest cities with 89 per cent of the population living within 300 metres of a park.

## Movement and accessibility

Urban mobility is important in improving the liveability of cities. Cities that are compact, with efficient public transport, clean energy vehicles and good options for cyclists, will have improved liveability for residents.

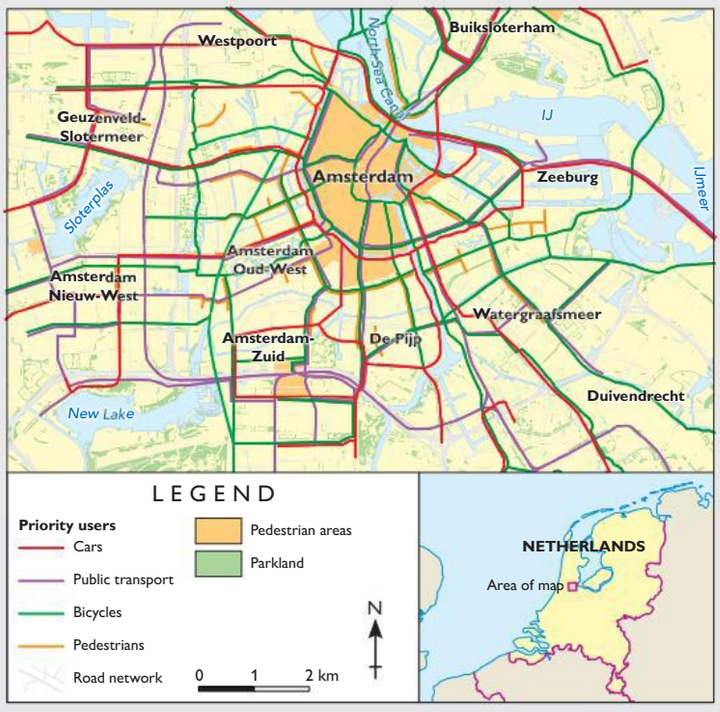
### Amsterdam – a cycling city

In Amsterdam, over 60 per cent of daily trips are made by bike in the inner city area and 38 per cent in the greater city area. The city has developed world-class facilities for cyclists such as bike racks, storage garages and 400 kilometres of bike paths. In 2013, Amsterdam was recognised as the world's most bicycle friendly city. It has a compact city centre and widespread 30-kilometre-per-hour speed zones that slow traffic and keep cyclists and pedestrians safe.

In March 2013, city planners in Amsterdam announced plans to prioritise different modes of transport in different streets. Separate priority networks for bikes will run parallel to priority networks for pedestrians, public transport and motor vehicles.

▲ Bicycle parking in front of Amsterdam Central Railway Station

**AMSTERDAM: PROPOSED PRIORITY TRANSPORT NETWORKS**



CASE STUDY

# Christchurch: Rebuilding a more liveable city

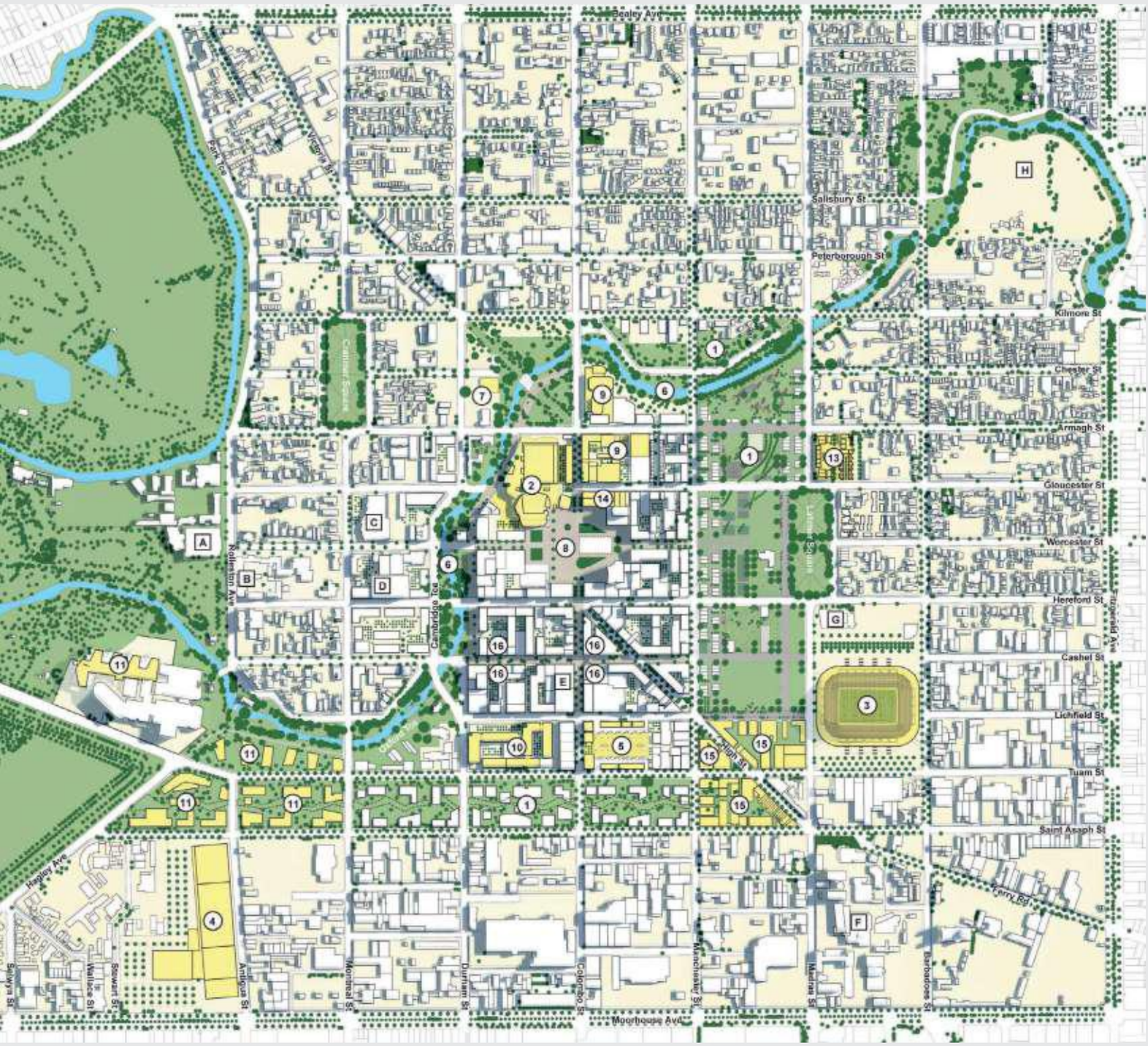
Earthquakes in September 2010 and February 2011 destroyed Christchurch, the second largest city in New Zealand. The 2011 earthquake led to the deaths of 185 people and destroyed buildings already weakened by the 2010 earthquake and its aftershocks. In 2012, it was announced that central Christchurch would be rebuilt into one of the most modern and liveable cities in the world. Prime Minister John Key stated: 'You're really starting from base zero, you've got the capacity to do what most cities don't.' The bold plan will shrink the size of the Central Business District (CBD) and frame it with parks. A Maori Cultural Centre will act as a welcoming point to visitors. Cathedral Square, the civic centre of the city, will be made more people friendly through the closure of roads and the inclusion of green open spaces. An international competition was launched to design and build a new residential complex based on the key principles of innovation, sustainability, affordability and community pride.

▲ Much of the Christchurch Cathedral was destroyed in the 2011 earthquake.

▲ The plan for a new Christchurch aims to shrink the size of the CBD and frame it with parks.

**CHRISTCHURCH: BLUEPRINT PLAN**

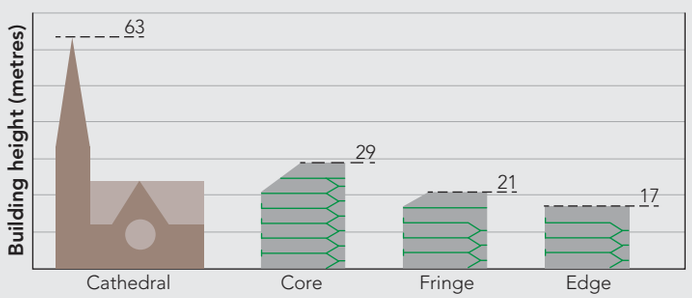

▲ Cathedral Square remains the city's civic centre.




▲ Public space along the Avon River

New height restrictions in Christchurch will ensure heritage buildings such as the cathedral are not dwarfed. They will also reduce wind and let in more sunlight.

**CHRISTCHURCH: BUILDING HEIGHTS IN THE CENTRAL CITY**



# Natural landscapes

Landscapes are the visible features of the Earth's surface. They are made up of a variety of geographical features that are characteristic of an area. Landscapes are divided into two categories – natural and human. The Earth has a great range of natural landscapes including mountain, desert, coastal and riverine. Within these landscapes distinctive landform features are shaped by movements in the Earth, weathering and erosion.

## Mountain landscapes

**Mountain**
Steep-sided, lone peak rising over 600 metres above the surrounding land

**Mountain range**
Chain of connected mountains

**Volcano**
Opening in the Earth's crust where molten rock, ash and gas can escape

**Glacier**
Large frozen river of ice that slowly moves down a valley in response to gravity

**Cirque**
Bowl-shaped hollow at the head of a valley or on a mountainside formed by glacial erosion

**Ridge**
Long, narrow elevation of land

## Riverine landscapes

**Delta**
Fan-shaped, low-lying area of deposits at the mouth of a river

**Drainage basin**
Area providing water to a river system

**Estuary**
River mouth broadening into the sea

**Floodplain**
Flat area over which water spreads in times of flood

**Gorge**
Deep, narrow steep-sided valley

**Lake**
Large body of water surrounded by land

**Meander**
Bend in a river

**Oxbow lake**
Crescent-shaped lake on a river floodplain

## Coastal landscapes

**Atoll**
Ring-shaped coral reef or a string of closely spaced small coral islands encircling a shallow lagoon

**Archipelago**
Group or chain of islands

**Bay**
Broad, curved indentation in the coastline

**Beach**
Deposited rock particles – such as sand, gravel or pebbles – along the coastline

**Cliff**
Steep rock face formed by the action of the waves

**Coral reef**
Underwater ridge formed by the growth and deposit of coral

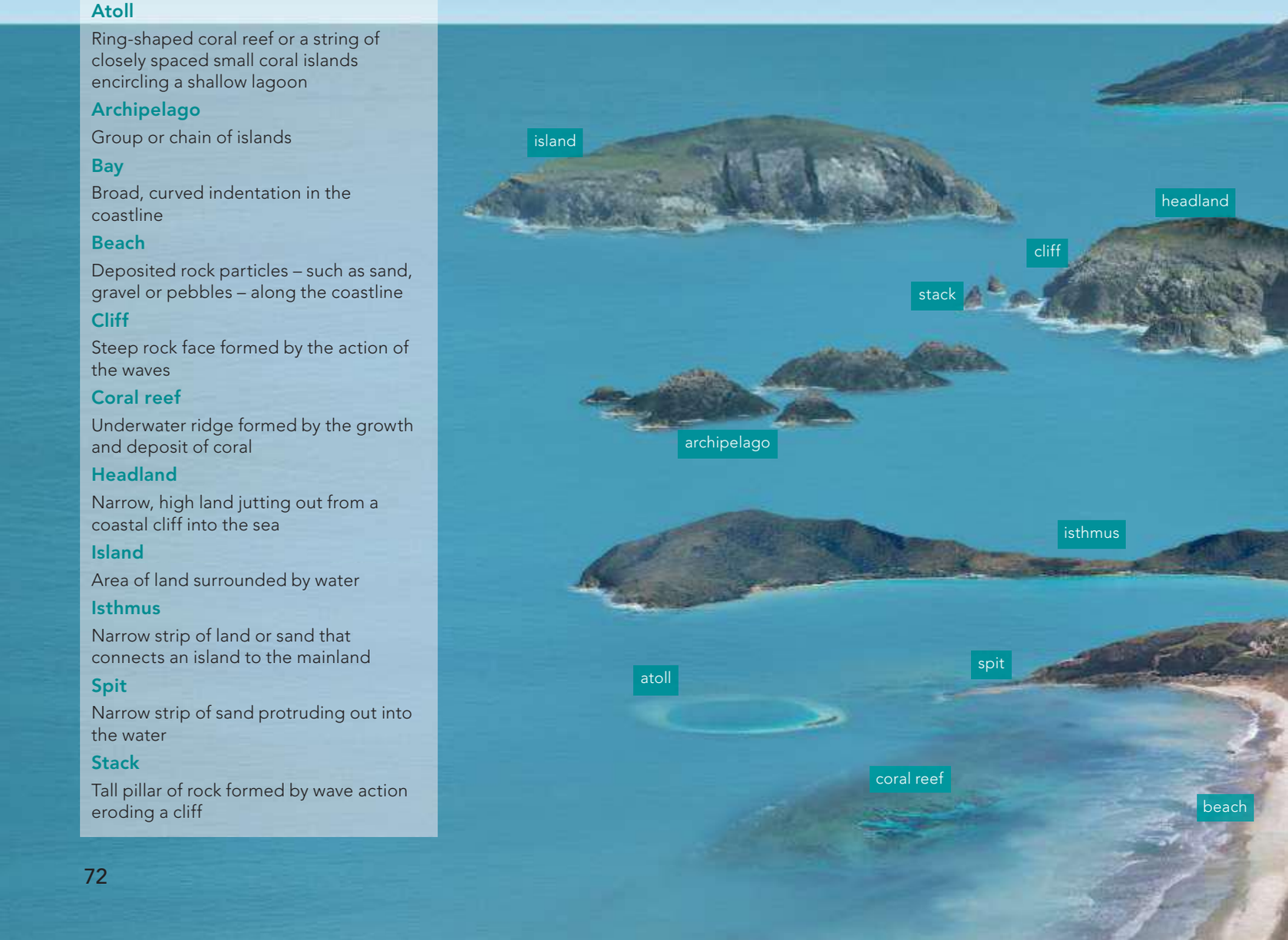
**Headland**
Narrow, high land jutting out from a coastal cliff into the sea

**Island**
Area of land surrounded by water

**Isthmus**
Narrow strip of land or sand that connects an island to the mainland

**Spit**
Narrow strip of sand protruding out into the water

**Stack**
Tall pillar of rock formed by wave action eroding a cliff



**River**
Natural waterway that takes water downhill by gravity to the sea

**Tributary**
Small river that joins a larger river

**V-shaped valley**
Narrow, steep-sided valley carved out by the upper reaches of a river

**Waterfall**
River-water spill over resistant rock

**Watershed**
High point from which water flows into a drainage basin

## Desert landscapes

**Desert dune**
Wind-blown particle formation

**Mesa**
Flat-topped, steep-sided plateau

**Butte**
Flat-topped hill

**Oasis**
Desert area with a water supply provided by groundwater

**Wadi**
Dry watercourse in a narrow valley that divides a plateau

**Inselberg**
Isolated, steep-sided hill of resistant rock on a plain

**Hamada**
Area covered in boulders and large stones

# Landforms


WORLD: PHYSICAL
30°W A 0° B 30°E C 60°E D 90°E E 120°E F 150°E G 180° H
60°N 30°N 0° 30°S 60°S 1 2 3 4 5 6
ARCTIC OCEAN
Franz Josef Land
Svalbard
Severnaya Zemlya
Kalaallit Nunaat (Greenland)
Greenland Basin
BARENTS SEA
Novaya Zemlya
KARA SEA
LAPTEV SEA
New Siberian Islands
EAST SIBERIAN SEA
CHUKCHI SEA
North Cape
NORWEGIAN SEA
Denmark Strait
Norwegian Basin
Iceland
Scandinavian Peninsula
Faroe Islands
Shetland Islands
Lake Onega
Lake Ladoga
URAL MOUNTAINS
Yenisey River
CENTRAL SIBERIAN PLATEAU
VERKHOYANSK RANGE
Lena River
Ob River
Siberia
Chukot Peninsula
Bering Strait
BERING SEA
British Isles
NORTH SEA
BALTIC SEA
WEST SIBERIAN PLAIN
Irtysh River
Ireland
Great Britain
Rhine River
Danube River
EUROPE
Volga River
Ural River
CASPIAN DEPRESSION
Lake Baikal
SEA OF OKHOTSK
Kamchatka Peninsula
Aleutian Basin
Aleutian Trench
Sakhalin
Amur River
Mt Blanc 4807 m
THE ALPS
Bay of Biscay
Mt Elbrus 5642 m
Lake Balkhash
Aral Sea
MANCHURIAN PLAIN
Kuril Islands
Kuril Trench
Cape Finisterre
Iberian Peninsula
Balkan Peninsula
BLACK SEA
CASPIAN SEA
TIEN SHAN
ASIA
Gobi Desert
Hokkaido
Japan Trench
MEDITERRANEAN SEA
Madeira Islands
ATLAS MOUNTAINS
Tigris River
Euphrates River
ZAGROS MOUNTAINS
PLATEAU OF IRAN
HINDU KUSH
KUNLUN MOUNTAINS
Godwin Austen (K2) 8611 m
PLATEAU OF TIBET (XIZANG PLATEAU)
Huang He River
NORTH CHINA PLAIN
SEA OF JAPAN
Honshu
Shikoku
Kyushu
Syrian Desert
HIMALAYAS
Mt Everest 8848 m
Yangtze River
EAST CHINA SEA
Canary Islands
AHAGGAR MOUNTAINS
Libyan Desert
Nile River
Thar Desert
Ganges R
Indus R
Taiwan
Sahara Desert
Arabian Peninsula
RED SEA
Cape Verde Islands
Cape Verde
Nubian Desert
DECCAN PLATEAU
Bay of Bengal
Hainan
Luzon
PHILIPPINE SEA
Northern Marianas
Challenger Deep –10 920 m
Mariana Trench
Philippine Trench
Philippine Islands
ARABIAN SEA
Andaman Islands
SOUTH CHINA SEA
Mekong River
Marshall Islands
Micronesia
PACIFIC OCEAN
AFRICA
Niger River
JOS PLATEAU
GUINEA HIGHLANDS
Lake Volta
ADAMAWA HIGHLANDS
Mt Cameroon 4095 m
Gulf of Guinea
Socotra
Cape Guardafui
ETHIOPIAN HIGHLANDS
Sri Lanka
Mindanao
Maldives
Borneo
Mt Konya 5199 m
Lake Victoria
Mt Kilimanjaro 5895 m
CONGO BASIN
Congo River
Sumatra
Sulawesi
New Guinea
Kiribati
Tuvalu
Solomon Islands
INDIAN OCEAN
Ascension
ATLANTIC OCEAN
Lake Tanganyika
Seychelles
JAVA SEA
Java
Java Trench
Timor
ARAFURA SEA
TIMOR SEA
Cocos Islands
Christmas Island
Comoro Islands
Angola Basin
BIE PLATEAU
Lake Malawi
Zambezi River
Madagascar
Mauritius
Reunion
Mid-Indian Ridge
Ninety East Ridge
West Australian Basin
CORAL SEA
Vanuatu
Fiji
Samoa
Tonga
New Caledonia
St Helena
Walvis Ridge
Namib Desert
Kalahari Desert
Mozambique Channel
Great Sandy Desert
AUSTRALIA
BARKLY TABLELAND
GREAT DIVIDING RANGE
Tonga Trench
Kermadec Trench
Kati Thanda (Lake Eyre)
Great Victoria Desert
Darling R
Murray R
Mt Kosciuszko 2228 m
Cape of Good Hope
Cape Leeuwin
Great Australian Bight
Tristan da Cunha
Gough Island
Cape Basin
Crozet Basin
South Australian Basin
TASMAN SEA
North Island
Aoraki/Mt Cook 3754 m
Tasmania
South West Cape
South Island
Chatham Islands
DRAKENSBERG MOUNTAINS
South-West Indian Ridge
Agulhas Basin
Crozet Islands
Prince Edward Islands
South-East Indian Ridge
Kerguelen Islands
Heard Island
Macquarie Island
South Indian Basin
SOUTHERN OCEAN
ANTARCTICA
LEGEND
Height of the land (metres)
5000
4000
2000
1000
500
250
100
0
Depression
0
200
2000
4000
6000
Depth of the sea (metres)
▲ Mt Everest 8848 m
Mountain
N
0 1000 2000 3000 km
SCALE 1:84 000 000
1 centimetre on the map measures 840 kilometres on the ground.
Modified Times Projection


FAST FACTS

## Shaping the Earth

Landforms are changing every day due to erosion. Erosion is the breakdown and transportation of the Earth's surface by water, wind and ice.

### Erosion by water

Moving water in rivers and ocean waves wears away the land, and transports and deposits the eroded material in another location.

▲ The Colorado River has eroded the Grand Canyon up to 1.8 kilometres deep.

### Erosion by wind

In deserts, wind picks up sand particles and sandblasts rocks into amazing shapes.

▲ This natural arch has been formed by wind erosion.

### Erosion by ice

Glaciers are large frozen rivers of ice that pick up loose rocks (moraine) and erode valleys into distinctive U-shapes. The ice is fed from compacted snow that gathers in mountain hollows called cirques.

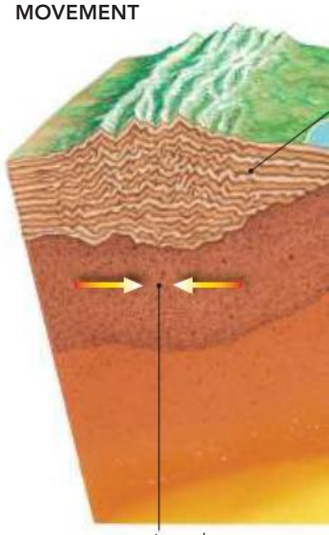
▲ The Portage Glacier in Alaska is fed by snow at the top of the valley.

# Plate tectonics

The Earth's crust is broken into huge tectonic plates that float and move on the semi-molten rocks in the mantle. The continents we know today are thought to have moved to their present positions over millions of years in a process known as continental drift. As the plates move apart or collide, landforms such as mountains and ocean trenches are created.

▲ The Himalayas, Earth's tallest mountain range, was formed between 50 and 70 million years ago when India collided with Asia.

**TECTONIC PLATE MOVEMENT**

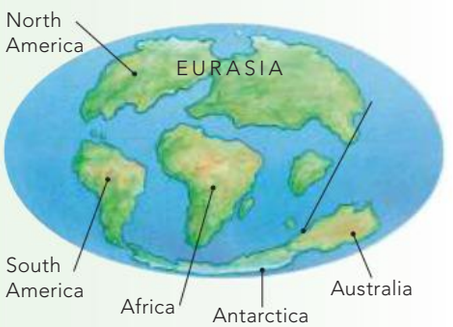


converging plates (two continental plates)

**CONTINENTAL DRIFT**

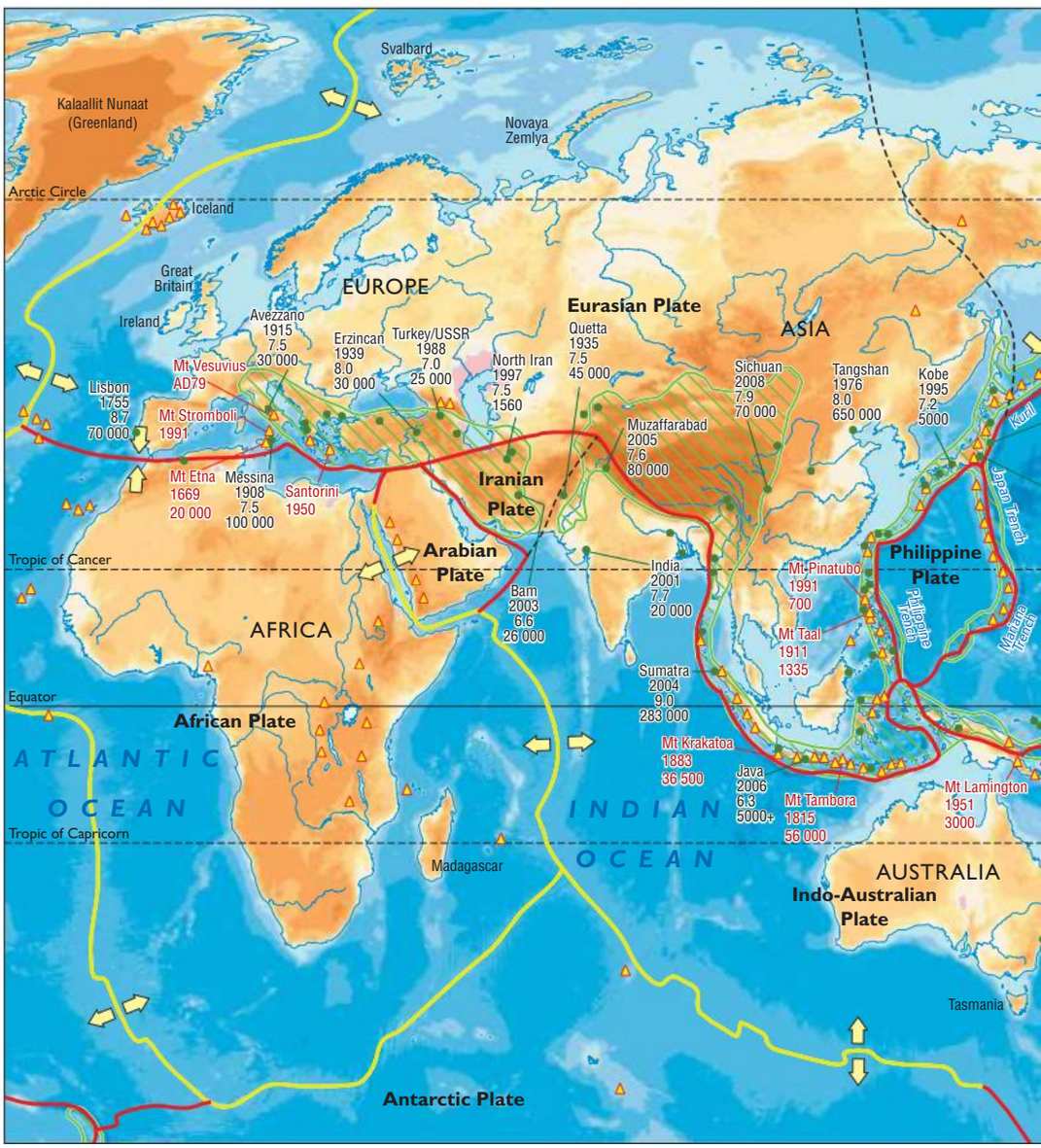

▲ 220 million years ago


▲ 135 million years ago




▲ 65 million years ago

**WORLD: TECTONIC PLATES**

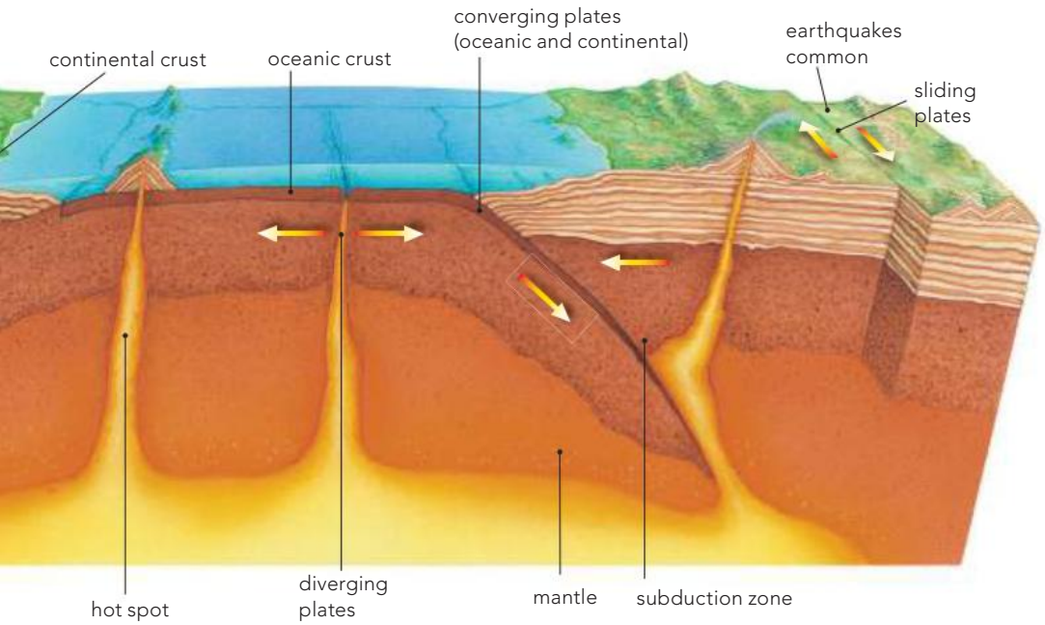


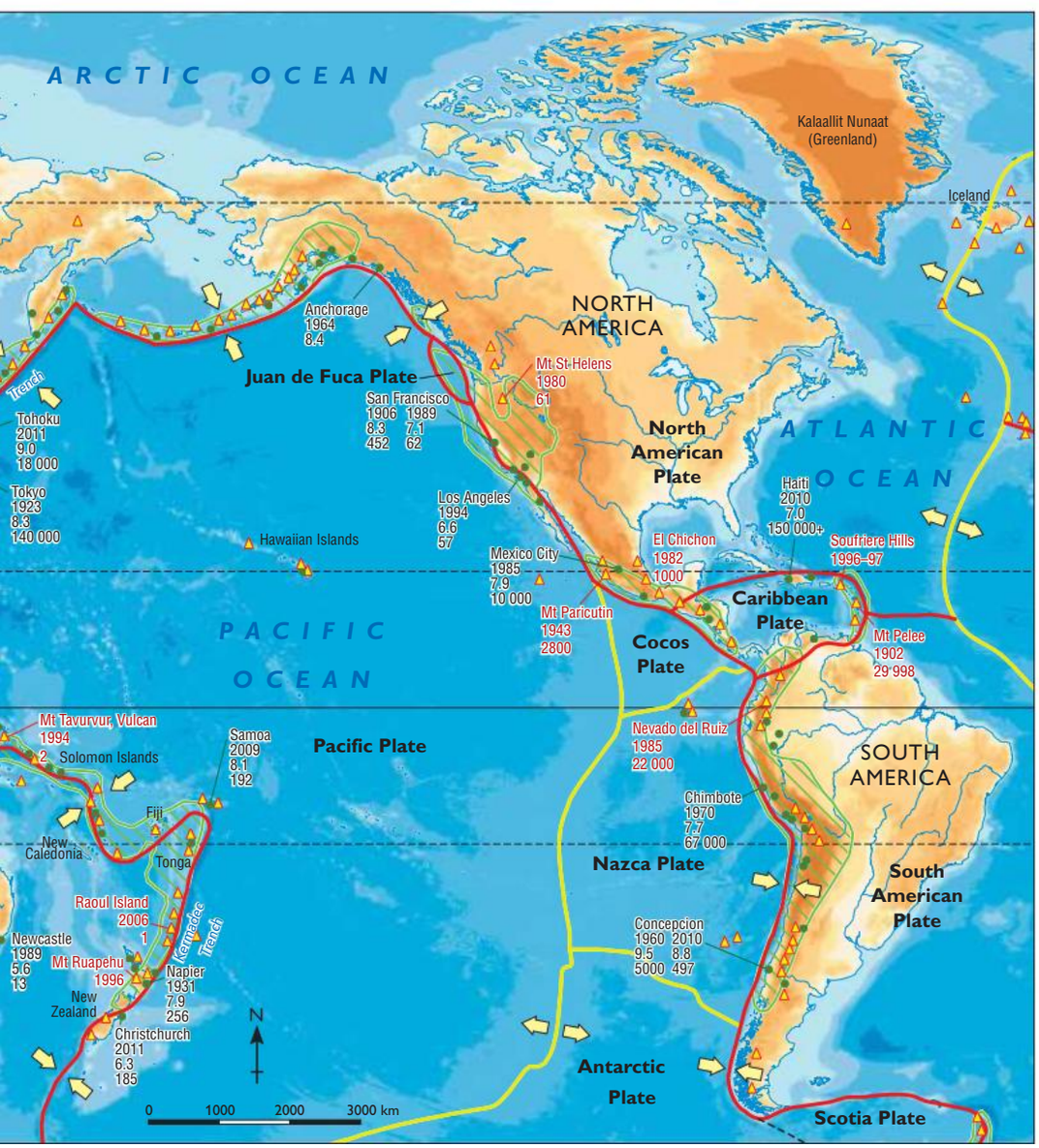

**LEGEND**

**Tectonic plates**
- Diverging boundary
- Converging boundary
- Uncertain boundary
- Direction of movement
- Cocos Plate — Plate name

**Volcanoes and earthquakes**
- Volcano
- Mt Etna 1669 20 000 — Volcano name, eruption year, deaths
- Earthquake
- Kobe 1995 7.2 5000 — Earthquake location, year, magnitude, deaths
- Earthquake zone

**Height of the land and depth of the sea (metres)**
- Over 5000
- 4000 to 5000
- 2000 to 4000
- 1000 to 2000
- 500 to 1000
- 200 to 500
- 100 to 200
- 0 to 100
- Land below sea level
- 0 to –200
- –200 to –2000
- –2000 to –4000
- –4000 to –6000
- Over –6000



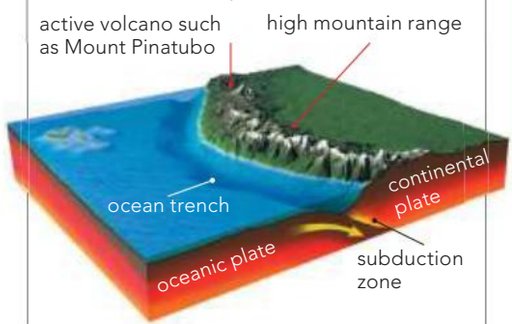

FAST FACTS

## Converging plates

Many of the world's major landforms are formed by the collision of plates at converging boundaries.

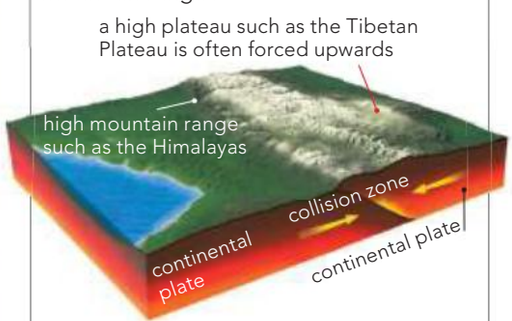
### Ocean-to-continent collision

Oceanic crust is denser than continental crust and is pushed downwards into the mantle when they collide in a process known as subduction. This creates a line of mountains along the crumpled edge and volcanoes as heat rises up through cracks in the crust. An ocean trench will form at the line of plate contact.



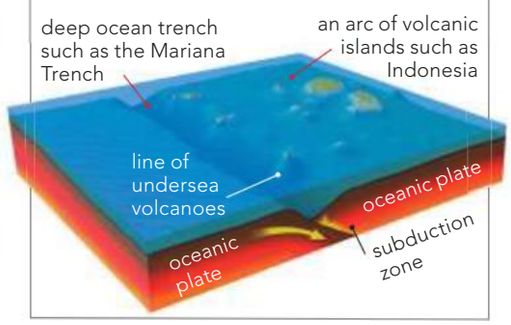

### Continent-to-continent collision

When two continental plates collide, they have similar densities, so no subduction takes place. Instead, the edges of the two plates crumple and fold into high mountain ranges.




### Ocean-to-ocean collision

When two oceanic plates collide, the older, denser crust will subduct below the newer crust, creating a deep ocean trench. The subduction also creates a line of undersea volcanoes that may reach above the ocean surface as an island arc.

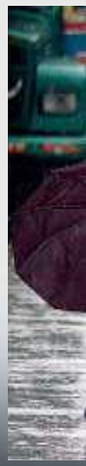


CASE STUDY

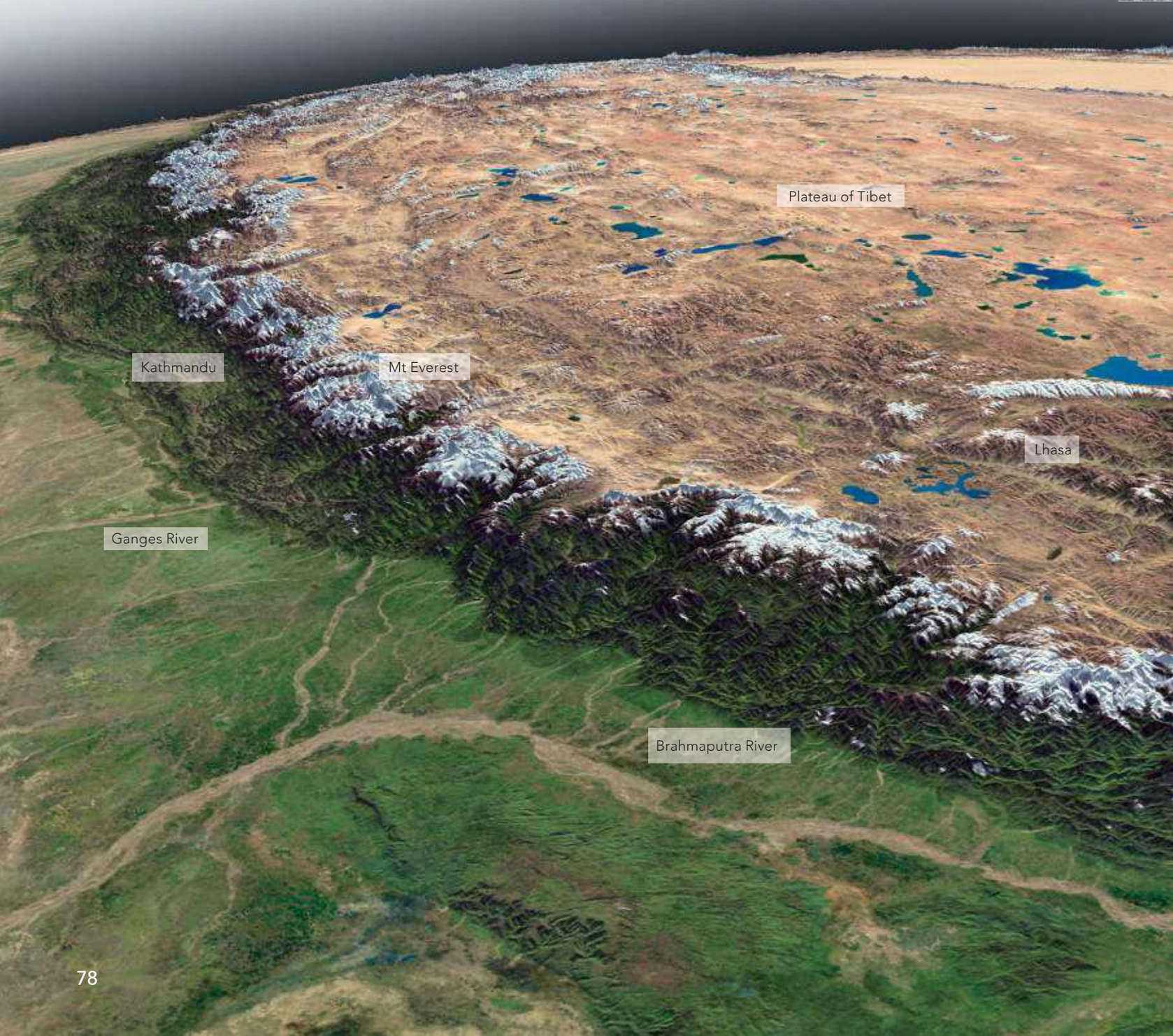
# Himalayas: The roof of the world

The centre of Asia is dominated by the high land of the Plateau of Tibet and the Himalayan mountains. Home to 90 of the world's 100 highest peaks, this massive range was formed by the collision of two of the world's landmasses, India and Eurasia. As India was driven north by plate movement, its northern edge and the southern edge of the Eurasian Plate crumpled and were thrust upwards at an amazing rate. In less than 50 million years the Himalayas have risen from sea level to almost nine kilometres high. As they rise they carry with them the fossilised remains of animals and plants that once lived in the shallow sea between the two landmasses.

As the Himalayas have risen, they have interrupted the northward movement of the monsoonal rains, causing their southern flanks to become one of the wettest places in the world, while the Plateau of Tibet is one of the driest. This also causes enormous rates of erosion as the monsoonal rain attacks the soft rocks and soils of the Himalayas. A billion tonnes of sediment a year is carried down the Ganges and Brahmaputra rivers and is ultimately deposited downstream at the Ganges Delta in the Bay of Bengal.



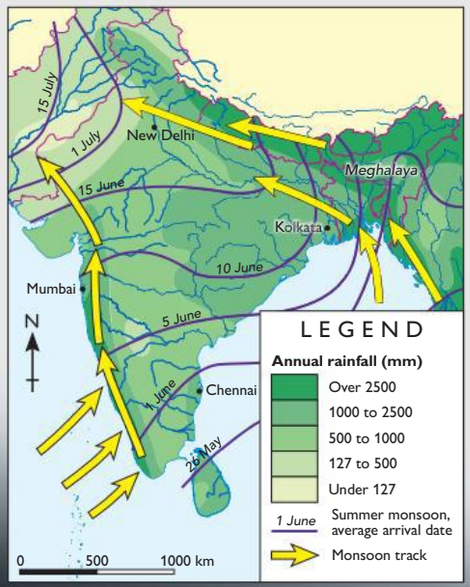
A mother takes her children to school in India's Meghalaya region. Monsoon season starts in Meghalaya in May and lasts until October. Meghalaya is the wettest region in the world.




Digital elevation model of the Himalayan mountains and the Plateau of Tibet. It was created by draping a satellite image of the region over a model of the Himalayas built from digital data collected about the height of the land.

INDIAN SUBCONTINENT: NORTHWARD MOVEMENT


INDIAN SUBCONTINENT: MONSOON TRACKS AND RAINFALL

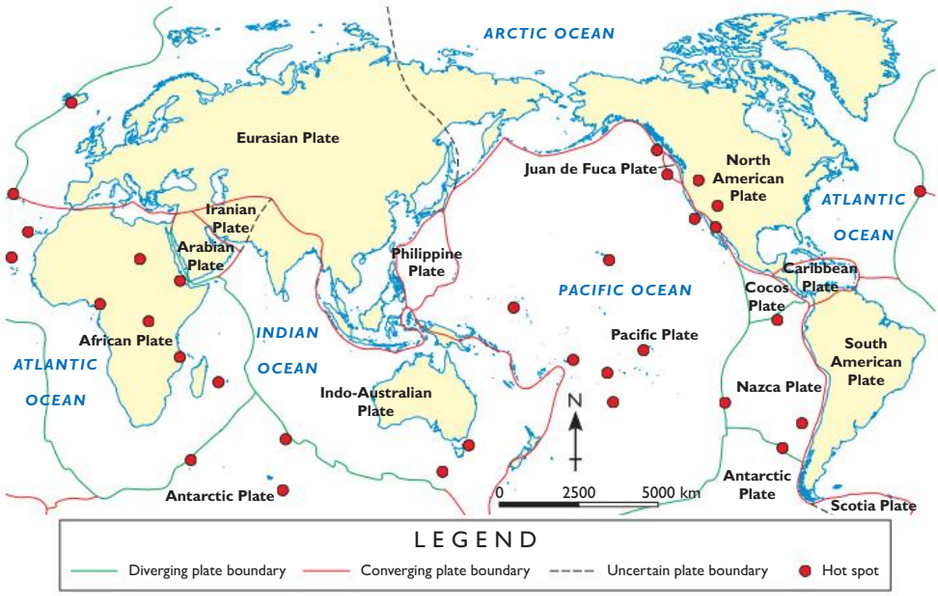


# Volcanoes and earthquakes

## Volcanoes

Volcanoes are generally found along tectonic plate boundaries. They form when magma – melted rock below the Earth's surface – is pushed through an opening in the crust. This material often builds up to form a cone-shaped mountain. Volcanoes can be classified as active (currently erupting or likely to erupt in the future), dormant (currently inactive but may erupt in the future) and extinct (unlikely to erupt again).

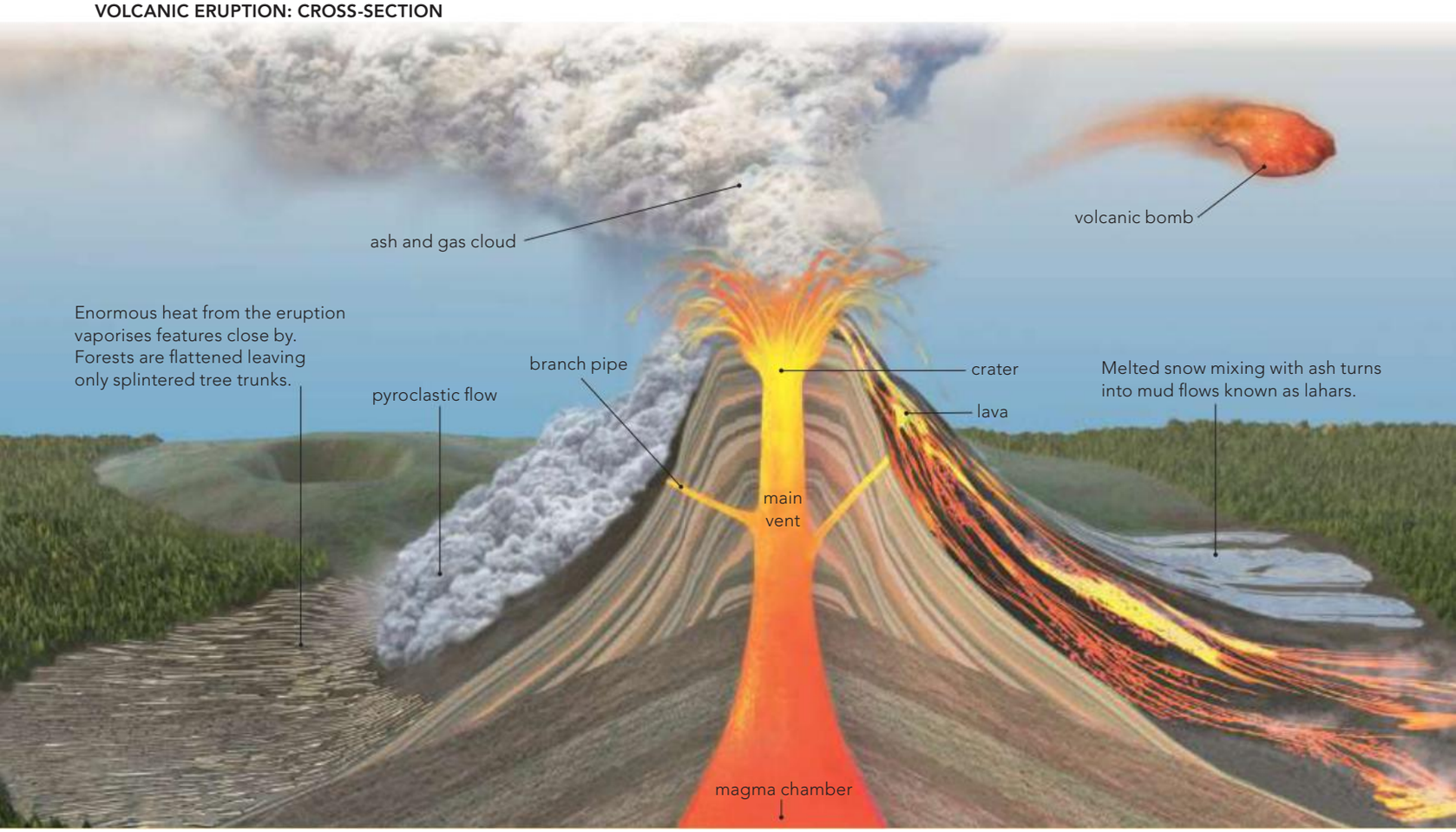
WORLD: HOT SPOTS




Hot-spot volcanoes are found well away from plate boundaries. Hot-spots in the Earth's mantle sometimes burn through the crust above to the surface. A line of hot-spot volcanoes is formed, such as the Hawaiian Islands. Mauna Loa in Hawaii (pictured left), the world's largest volcano, formed over a hot spot in the Pacific Ocean.

◀ Lava runs down the slopes of Mauna Loa in Hawaii.

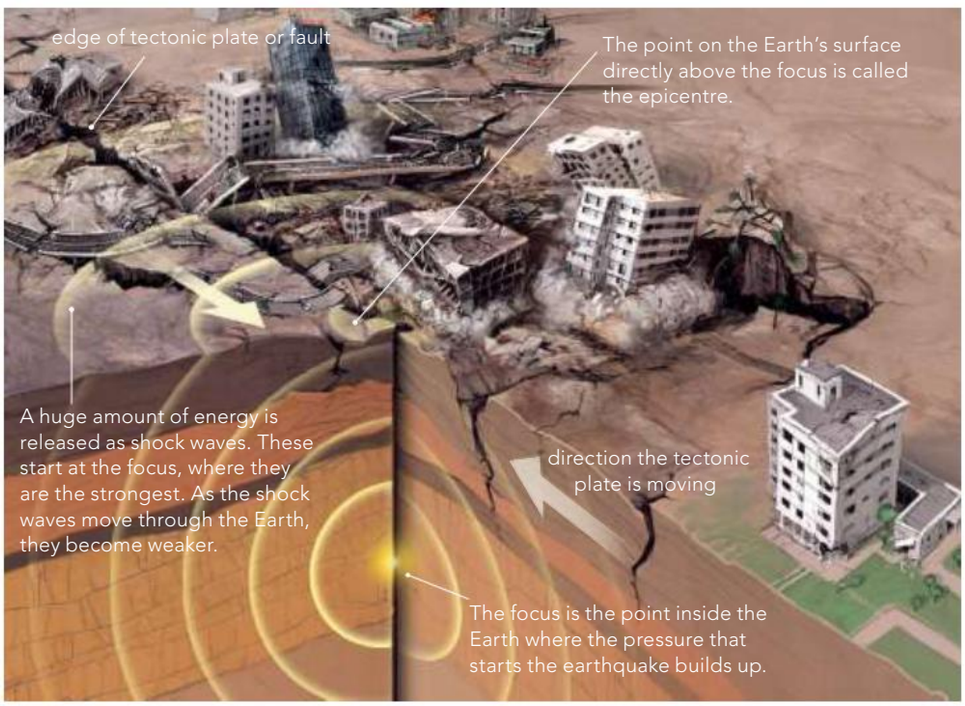
VOLCANIC ERUPTION: CROSS-SECTION



## Earthquakes

An earthquake is the sudden shaking of part of the Earth's surface. Most earthquakes occur around the edges of tectonic plates that are sliding past one another. Tectonic plates do not move smoothly and sometimes they become stuck. Eventually, so much pressure builds up that the plates break free with a sudden movement. This causes an earthquake.

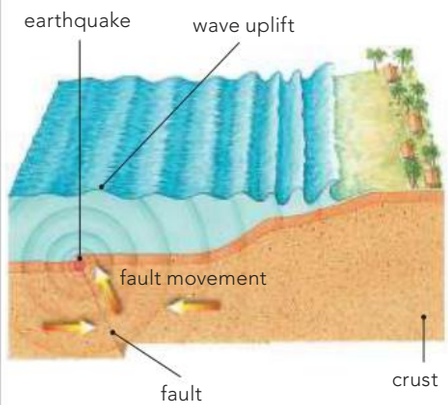
**CROSS-SECTION: EARTHQUAKE**



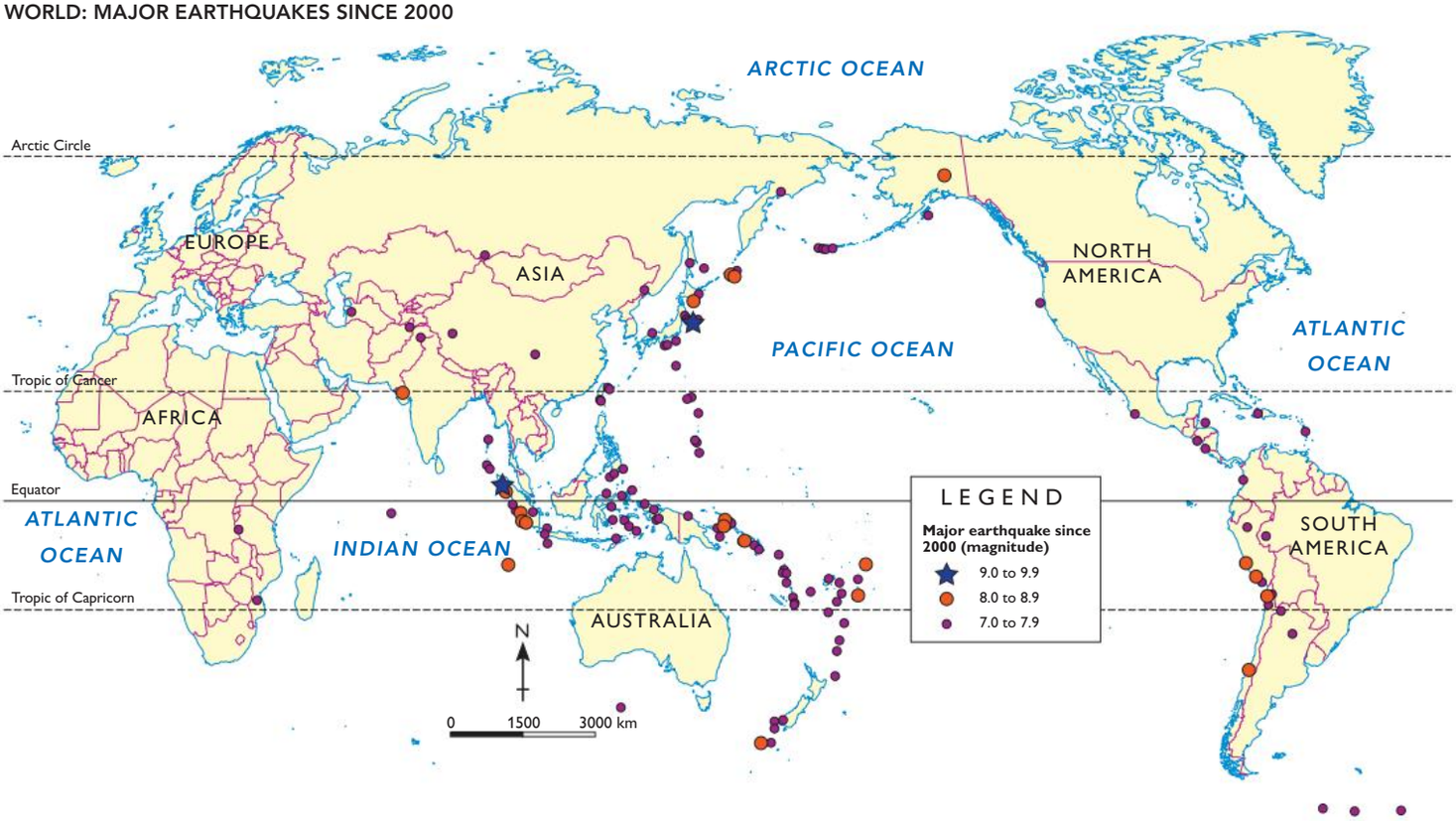

FAST FACTS

### Tsunamis

These giant ocean waves are generated by offshore earthquakes, volcanic eruptions or landslides. The energy wave from the focus of an earthquake passes through the ocean and greatly increases the height and speed of the waves, particularly as it approaches the coast where the water becomes shallower. The worst tsunami in history occurred in South Asia in 2004 when a powerful underwater earthquake triggered a tsunami that travelled 600 kilometres in just 75 minutes, claiming more than 250 000 lives.




**WORLD: MAJOR EARTHQUAKES SINCE 2000**

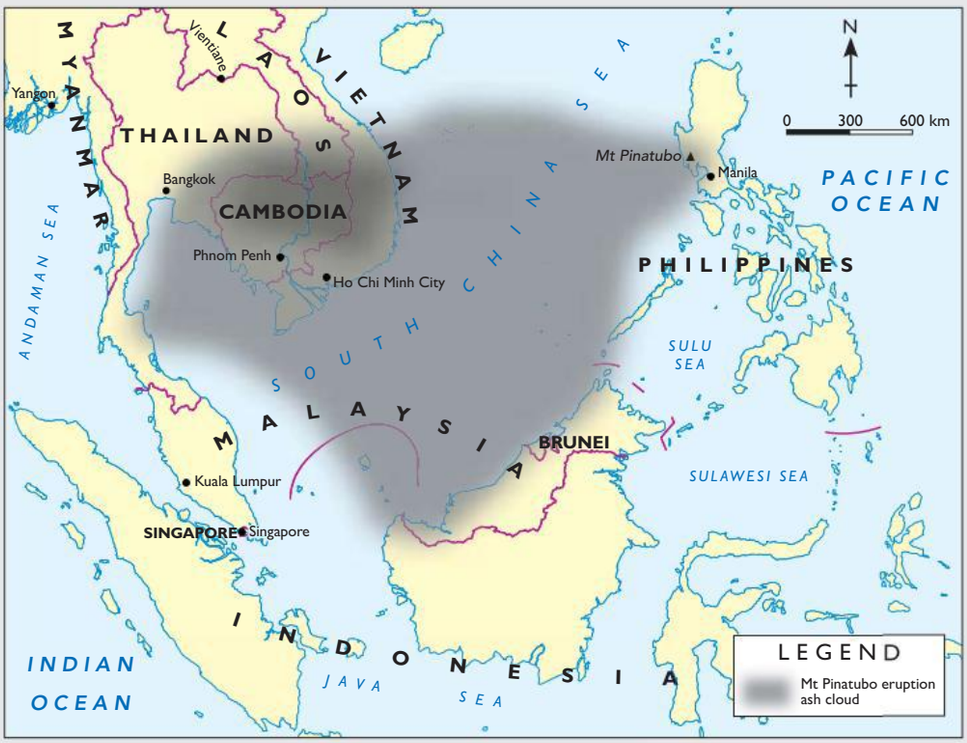


CASE STUDY

# Mount Pinatubo: Volcanic eruption in the Philippines

The eruption of Mount Pinatubo in the Philippines in June 1991 exploded gas and rock particles high into the atmosphere. Ash fell as far away as Vietnam, Malaysia and Cambodia. The eruption of Mount Pinatubo claimed more than 800 lives and 100 000 homes. Burning ash clouds scorched the land for up to 20 kilometres from the crater and many villages were completely destroyed by the pyroclastic flow (a mass of fast-moving hot gas, ash and rock) and mudslides.

**MOUNT PINATUBO: ASH CLOUD, 1991**





▲ Satellite image of Mount Pinatubo showing mudslides (lahars) in the valleys

**MOUNT PINATUBO: LAHARS**


▲ Sudden melting of snow and ice or the release of water from a crater lake can cause huge mudslides, called lahars, up to 50 metres thick.

▲ A pyroclastic flow with burning clouds of gas and rock of 750 degrees Celsius raced down Mount Pinatubo at more than 100 kilometres per hour.

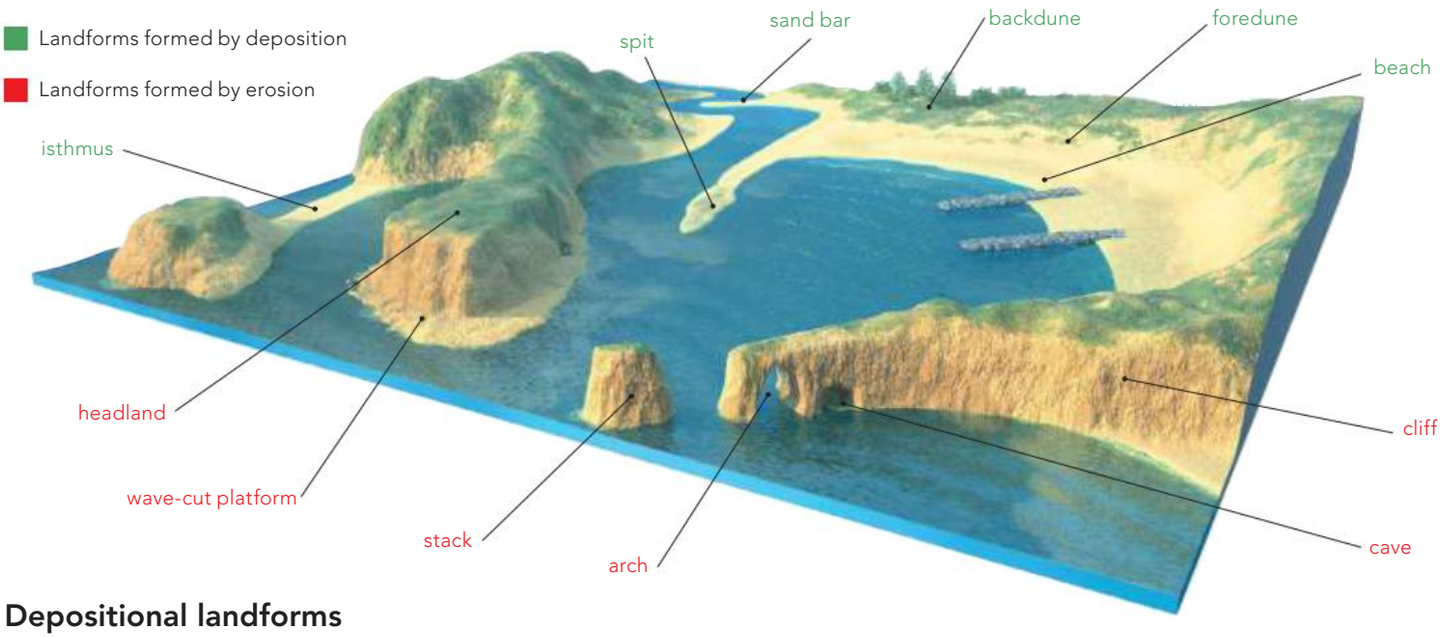
◀ The indigenous Aeta people were forced from their villages where they had successfully survived on a diet of fruits, wild banana, honey, game and fish collected from forests on the lush slopes of Mount Pinatubo. The eruption devastated the Aeta population. More than 200 000 Aeta lost their homes and their livelihoods were destroyed. The surviving Aeta people were forced into resettlement camps or moved to urban areas.

# Coastal landscapes

Coasts are some of the world's most dynamic landscapes. They are subject to large- and small-scale changes from the energy of waves, ocean currents and wind, as well as from human activities such as city building and recreation.

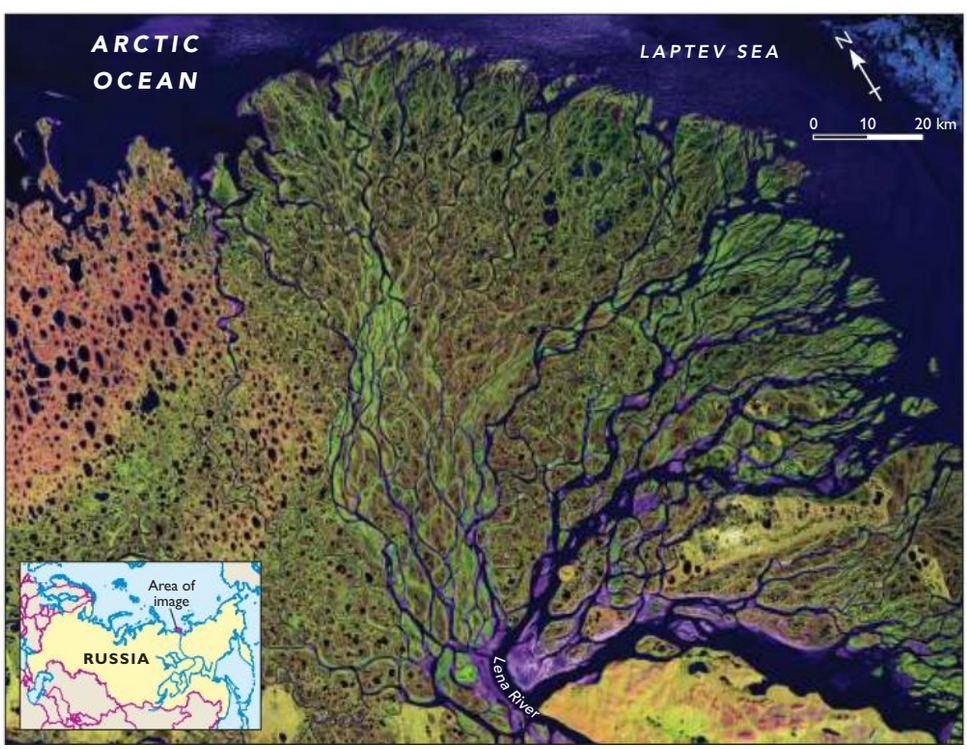
The sea and the land interact at the coast to create many different landforms. Coastal landforms are formed in two main ways. At some coasts, more sediment is carried by rivers, waves and currents to the coast than is eroded away. Low-energy waves then carry and shape the material into landforms such as deltas, spits, dunes and isthmuses. These landscapes are known as depositional coastlines. On other coasts, more material is eroded than is deposited. Here the action of the waves and currents shapes the coastline into landforms such as stacks, arches and caves. This landscape is called an erosional coastline.

**COMMON COASTAL LANDFORMS**




## Depositional landforms

The delta of the Lena River, covering an area of 30 000 square kilometres, is one of the world's largest deltas. The Lena flows 4400 kilometres from southern Russia to its delta on the Arctic coast of northern Russia. At the delta, the water flows through numerous channels, depositing silt and building land, before emptying into the Laptev Sea. In this satellite image vegetation appears shades of green, sandy areas as red and the water as purple and blue.

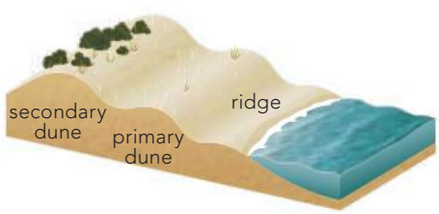



◀ False-colour satellite image of the Lena Delta

FAST FACTS

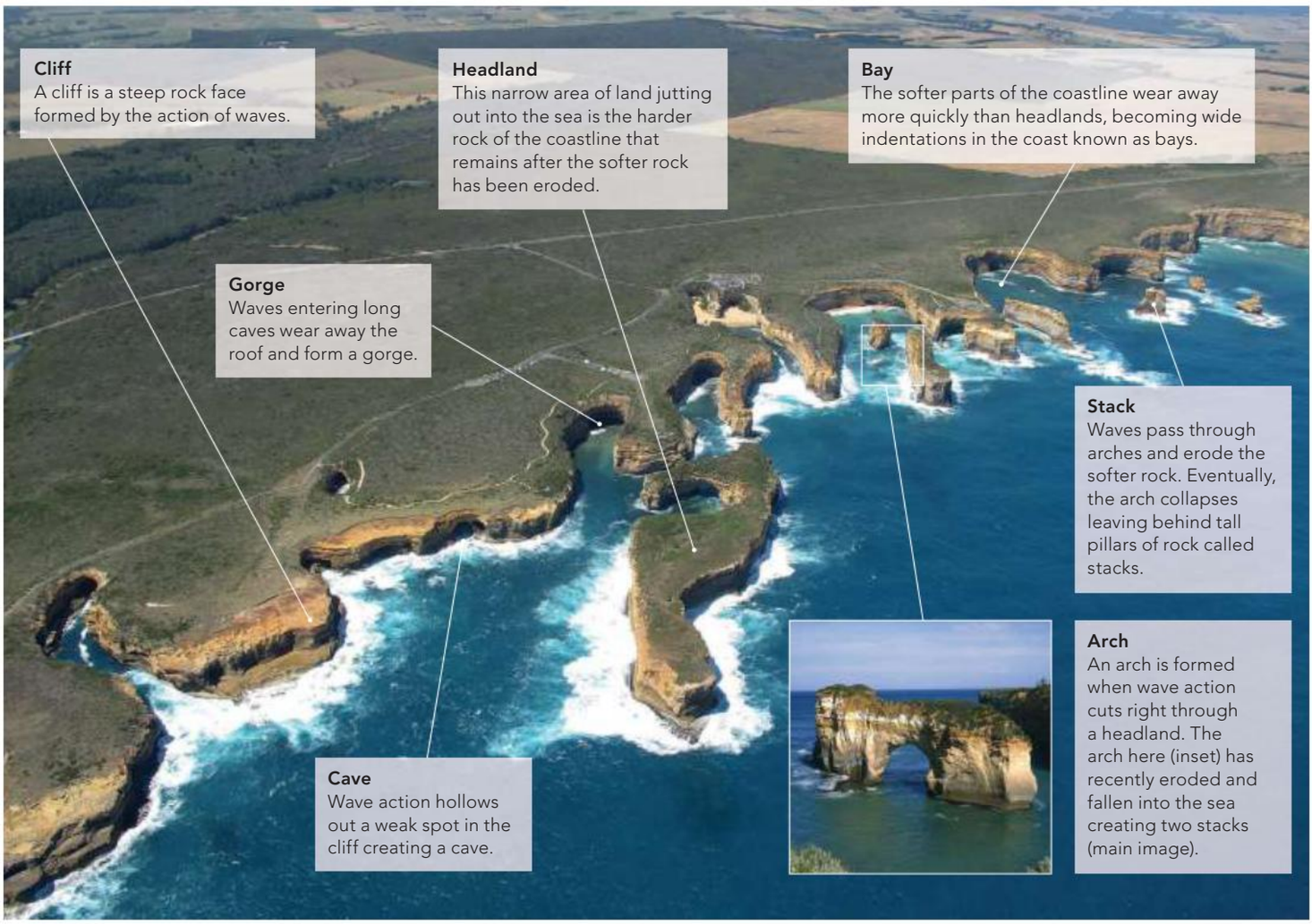
**FORMATION OF A SANDY BEACH**


▲ Waves carry sand onto the shore where it collects and forms a beach. Wind picks up dry sand and blows it inland.




▲ Sand is trapped by plants and collects in dunes. Over time, larger plants grow across the dunes making them stable.

## Erosional landforms

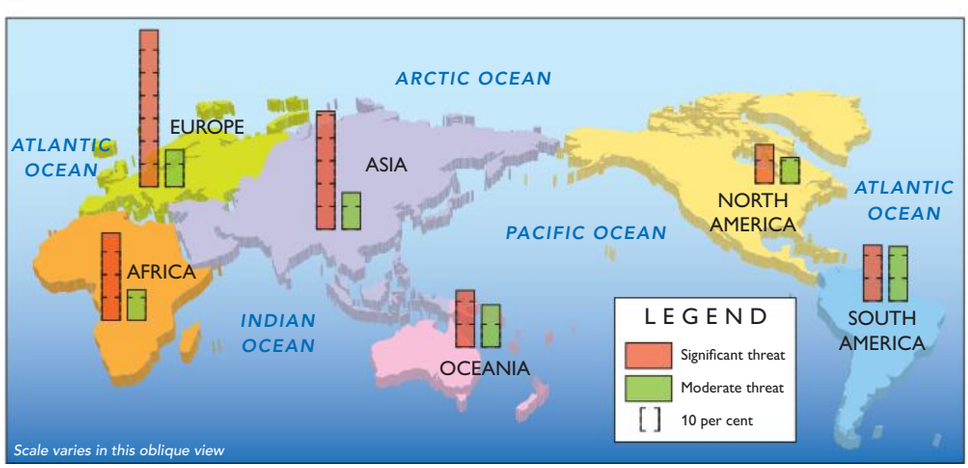



▲ The eroded limestone coastline near Port Campbell in Victoria is famous for its series of stacks known as the Twelve Apostles.

## Threats to coastal landscapes

More than 50 per cent of the world's population lives on or near the coast. Because coasts are rich in resources, they are also attractive for economic activity such as fishing, industry and tourism. These factors may contribute to the degradation of coastal landscapes if they are not carefully planned and managed.

**WORLD: COASTLINES UNDER THREAT**




▲ Shrimp farming in the Mekong Delta, Vietnam. The clearing of mangroves for the shrimp farming industry has had devastating effects on coastal landscapes throughout the world. Mangroves are vital for coastal fisheries and also protect coastal areas from storms.

# Desert landscapes

Deserts cover about one-third of the Earth's surface. All deserts are characterised by a lack of water. Most are hot deserts that lie between the latitudes of 15°N and 30°N and between 15°S and 30°S. Cold deserts are predominantly snow-covered mountain peaks or polar areas. The world's deserts are expanding through a process known as desertification. This occurs when land along the edge of a desert is damaged by a combination of drought and overuse.

▲ A grid of fencing has been built to try to slow the advancing sand dunes into Tekenket in Mauritania, Africa.

**WORLD: DESERTS**


FAST FACTS

## Dune types

▲ **Barchan** – These arc-shaped sand ridges form in the direction of the prevailing wind.

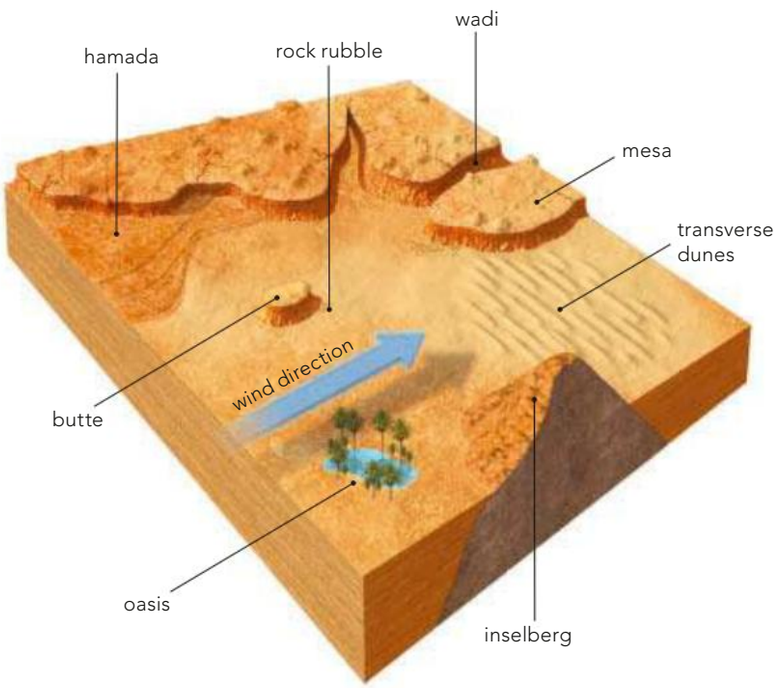
▲ **Parabolic** – U-shaped sand ridge, with its blow-out facing in the direction of the prevailing wind.

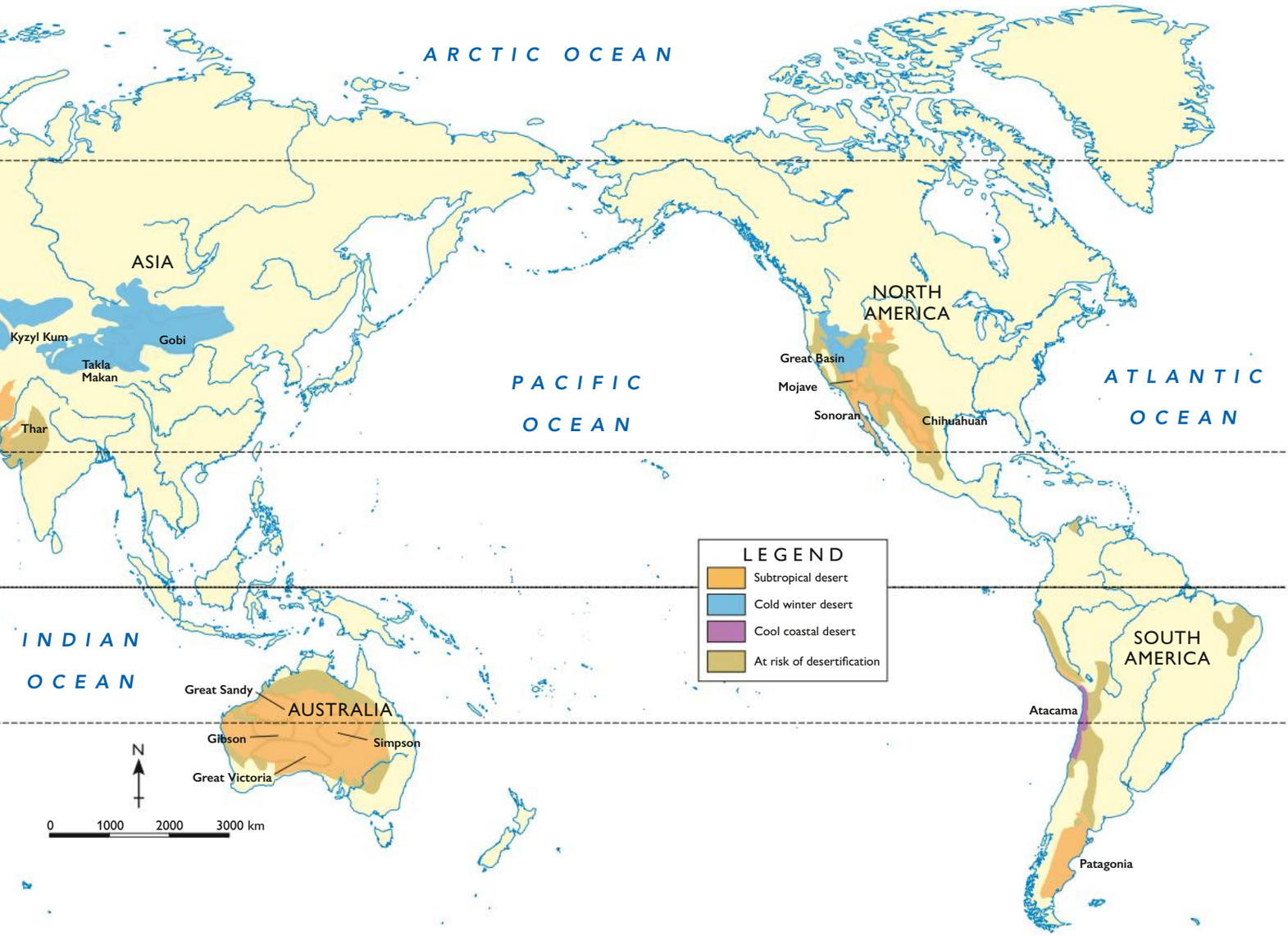
▲ **Longitudinal** – Dunes form parallel to the prevailing wind direction.

▲ **Transverse** – Dunes form at a 90° angle to the prevailing wind direction.

▲ **Star** – Dunes form when winds from several different directions converge.

**DESERT LANDFORMS**






▲ Buttes in Monument Valley, USA

▲ Oasis in the Sahara Desert, northern Africa

▲ Australia's famous inselberg, Uluru

# Australia's World Heritage sites

The World Heritage Commission lists important natural, cultural and mixed landscapes from around the world. They consider these sites to be of outstanding value to humanity, and worthy of conservation and protection. Australia has 19 sites included on World Heritage List.

**1. Australian Convict Sites (2010)**

There are 11 sites across Australia that are examples of our convict past. This is Port Arthur, a former penal settlement in Tasmania.

**2. Australian Fossil Mammal Sites (1994)**

At Riversleigh (Queensland) and Naracoorte (South Australia) megafauna fossils and remains have been found. This is a skeleton of a marsupial lion.

**3. Fraser Island (1992)**

Fraser Island is the world's largest sand island and home to unique dune systems, freshwater lakes and tropical rainforests.

**4. Gondwana Rainforests of Australia (1986)**

These sites include the world's largest area of subtropical rainforest as well as areas of warm and cool temperate rainforest.

**5. Great Barrier Reef (1981)**

The Great Barrier Reef is the largest coral reef on Earth. This World Heritage area also contains many Indigenous sites.

**6. Greater Blue Mountains Area (2000)**

Examples of ancient plants that help us trace the development of Australia's eucalypt species are found in the Greater Blue Mountains.

**7. Heard Island and McDonald Islands (1997)**

These remote islands are one of the few pristine environments left in the world. Heard Island features 'Big Ben', an active volcano covered in snow and ice.

**AUSTRALIA: WORLD HERITAGE SITES**


**8. Kakadu National Park (1981)**

The floodplains of Kakadu show the effects of sea-level change in northern Australia. Aboriginal cultural sites provide a record of life for tens of thousands of years.

**9. Lord Howe Island Group (1982)**

These islands feature rainforests, volcanic mountains and the world's southernmost coral reef. They are home to many rare animals and birds.


**10. Macquarie Island (1997)**

Macquarie Island is the only place in the world where rocks from the Earth's mantle are exposed above sea level. The island also attracts wildlife like penguins and seals.

**11. Ningaloo Coast (2011)**

This region is recognised for its amazing coastal landforms and wildlife. The reef system hosts up to 500 whale sharks each year.

**12. Purnululu National Park (2003)**

This site includes the Bungle Bungle Range, a spectacularly eroded landscape of striped sandstone rocks.

**13. Royal Exhibition Building and Carlton Gardens (2004)**

Unlike most international exhibition buildings, Melbourne's was designed and built as a permanent structure.

**14. Shark Bay (1991)**

Shark Bay's rich sea-grass beds support a large dugong population. Four-thousand-year-old stromatolites grow on sandy stretches of the bay.

**15. Sydney Opera House (2007)**

The Sydney Opera House on Sydney Harbour is one of the finest architectural and engineering works of the 20th century.

**16. Tasmanian Wilderness (1982)**

The Tasmanian Wilderness is one of the world's last temperate rainforests. Evidence of human occupation dates back 20 000 years.

**17. Uluru–Kata Tjuta National Park (1987)**

The rock formations of Uluru and Kata Tjuta are remarkable landform features. Rock art in the caves around the base of Uluru provides information about the region's cultural traditions.

**18. Wet Tropics of Queensland (1988)**

Gorges and waterfalls are scattered throughout the Wet Tropics of Queensland. The area is home to many rare and endangered plant and animal species.

**19. Willandra Lakes Region (1981)**

This region features ancient lakes fringed by crescent-shaped dunes. Remains of a 40 000-year-old Aboriginal female have been unearthed here.

# Landscape hazards

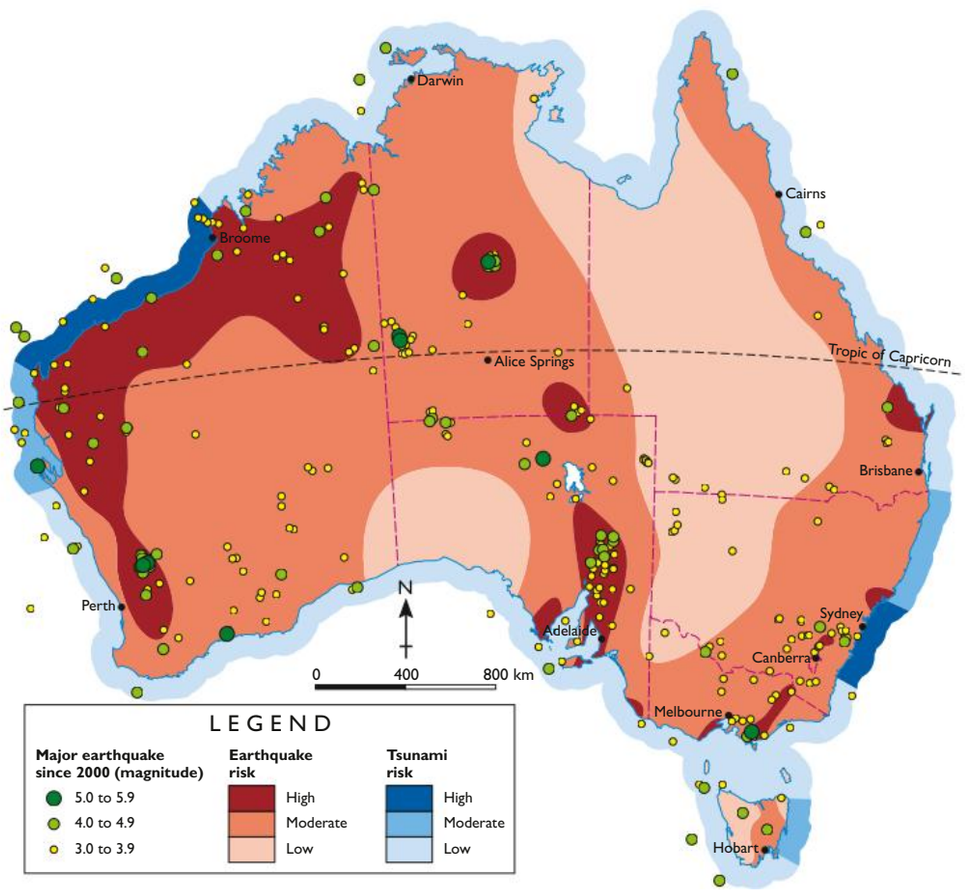
Landscape hazards (or geomorphological hazards) are hazards that originate from the Earth's crust. They can have a disastrous impact on the surrounding area and the people living there. Landscape hazards include volcanic eruptions, earthquakes, tsunamis, landslides and avalanches.

▲ In 2011, a 9.0 magnitude earthquake triggered a 10-metre-high tsunami that killed 18 000 people and destroyed large areas of north-east Japan.

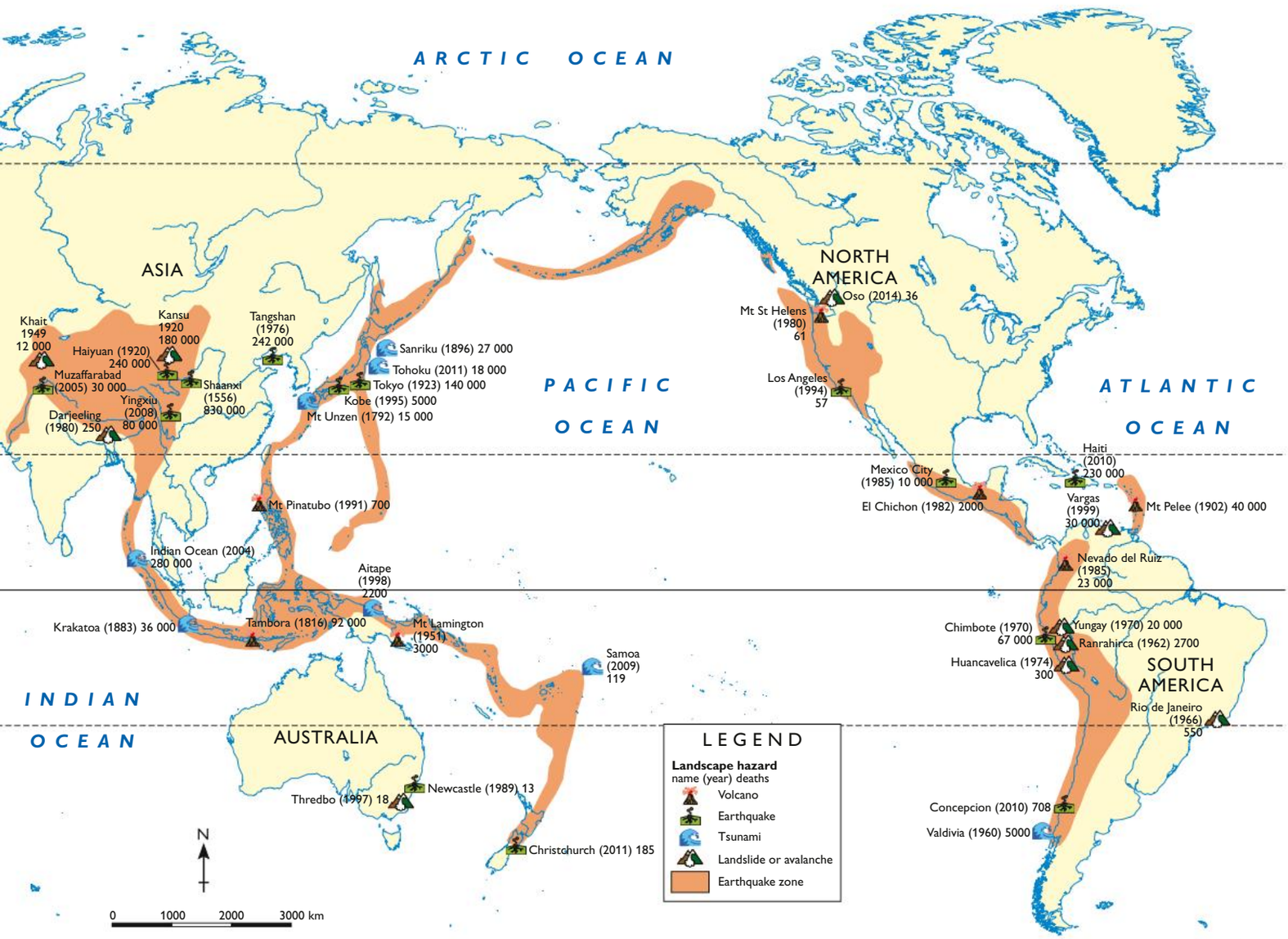
▲ In May 1980, the volcanic eruption of Mount St Helens in the USA caused the largest landslide on Earth in recorded history.

**WORLD: LANDSCAPE HAZARDS AND DISASTERS**


**AUSTRALIA: EARTHQUAKE AND TSUNAMI RISK**




▲ It is estimated that 2000 tonnes of liquefied earth and debris came down the slope during the Thredbo landslide.

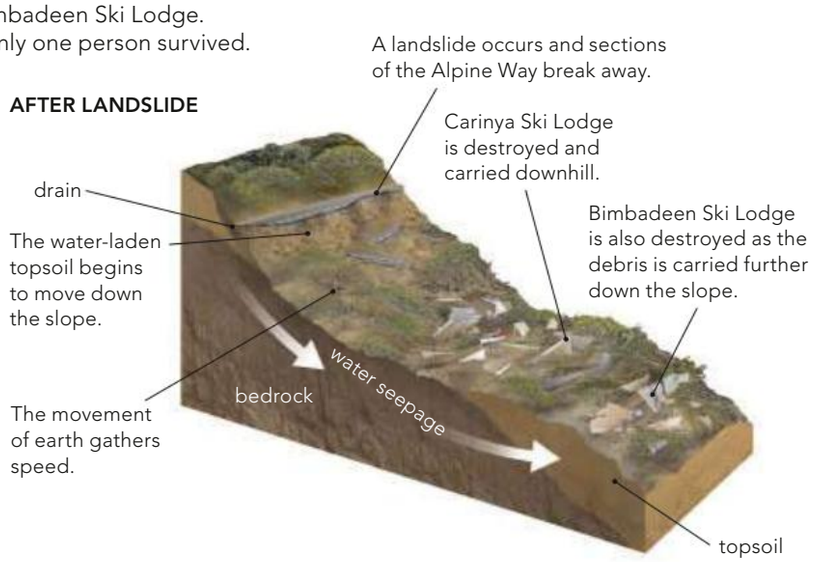



## Thredbo landslide, 1997

A landslide at Thredbo in New South Wales in 1997 led to the deaths of 18 people. Land slipped on the Alpine Way, pushing Carinya Ski Lodge into Bimbadeen Ski Lodge. Both lodges were destroyed and the residents were buried. Only one person survived.

**BEFORE LANDSLIDE**


**AFTER LANDSLIDE**



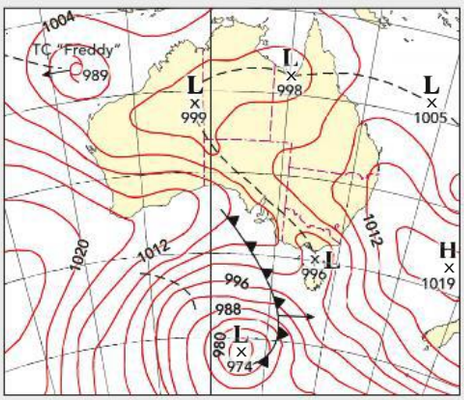
CASE STUDY

# Kinglake: Black Saturday bushfires in Victoria

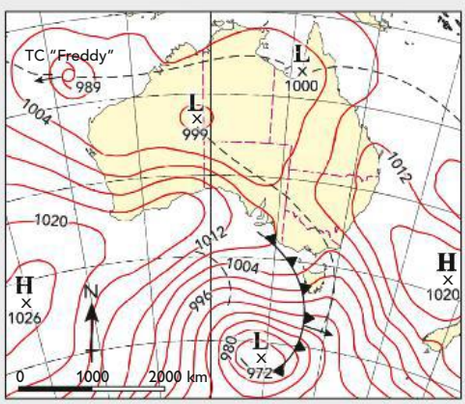
Bushfires are another type of hazard that impacts on the landscape. They are known as biotic hazards. Australia's worst natural disaster occurred on 7 February 2009, when bushfires destroyed 1800 homes and killed 173 people in Victoria. The combination of strong northerly winds, low humidity and the highest temperatures on record (Melbourne recorded 46.4 degrees Celsius) led to extreme fire conditions. A strong south-westerly change arrived at 5.30 pm, turning the long eastern fire flanks into massive fire fronts that destroyed Kinglake and Marysville (page 199, C2).

▲ The town of Kinglake was completely destroyed by the Kilmore East fire.

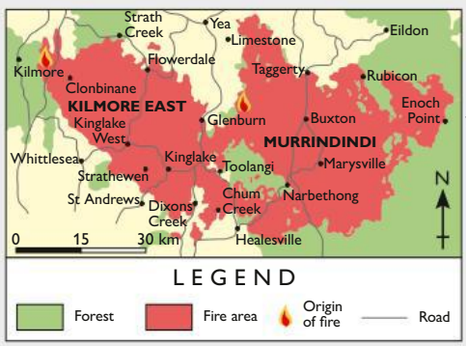
### AUSTRALIA: WEATHER MAP, 7 FEBRUARY 2009, 5 PM



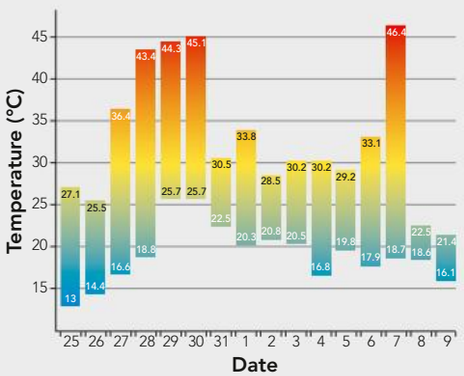

### AUSTRALIA: WEATHER MAP, 7 FEBRUARY 2009, 11 PM




### KINGLAKE: BLACK SATURDAY BUSHFIRES

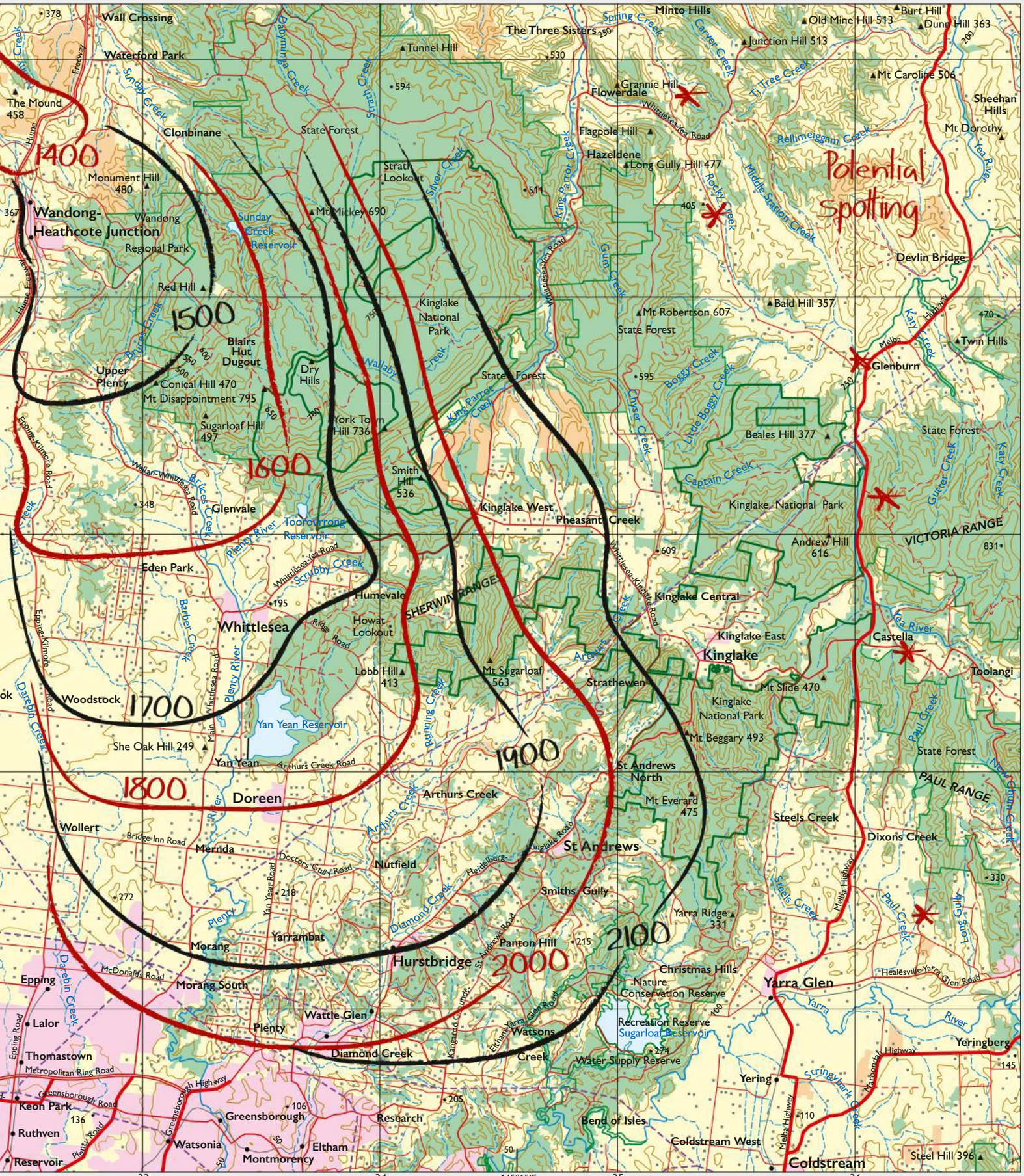



### MELBOURNE: JANUARY AND FEBRUARY TEMPERATURES 2009




Topographic map of the Kinglake region, ▶ overlaid with fire prediction information prepared at 3.11 pm on 7 February 2009 by the Department of Sustainability and Environment. This information, along with further maps and statements, was provided to the 2009 Victorian Bushfires Royal Commission.

### KINGLAKE AND SURROUNDS: TOPOGRAPHIC MAP


Potential spotting
1400
1500
1600
1700
1800
1900
2000
2100
Wall Crossing
Waterford Park
Clonbinane
State Forest
Wandong-Heathcote Junction
Wandong Regional Park
Monument Hill 480
Mt Mickey 690
Sunday Creek Reservoir
Red Hill
Kinglake National Park
Blairs Hut Dugout
Upper Plenty
Conical Hill 470
Mt Disappointment 795
Dry Hills
Sugarloaf Hill 497
York Town Hill 736
Smith Hill 536
Glenvale
Toorourrong Reservoir
Eden Park
Humevale
Whittlesea
Howat Lookout
Lobb Hill 413
Mt Sugarloaf 563
Woodstock
Yan Yean Reservoir
She Oak Hill 249
Yan Yean
Doreen
Arthurs Creek
Wollert
Bridge Inn Road
Mernda
Doctors Gully Road
Nutfield
Smiths Gully
Yarrambat
Morang
Hurstbridge
Panton Hill
Epping
Morang South
McDonalds Road
Lalor
Wattle Glen
Plenty
Thomastown
Diamond Creek
Metropolitan Ring Road
Greensborough Road
Keon Park
Ruthven
Greensborough
Research
Watsonia
Eltham
Montmorency
Reservoir
Kinglake West
Pheasant Creek
Kinglake Central
Kinglake East
Kinglake
Strathewen
Kinglake National Park
Mt Beggary 493
St Andrews North
St Andrews
Mt Everard 475
Steels Creek
Dixons Creek
Smiths Gully
Yarra Ridge 331
Panton Hill
Christmas Hills
Nature Conservation Reserve
Recreation Reserve
Sugarloaf Reservoir
Water Supply Reserve
Watsons Creek
Bend of Isles
Coldstream West
Coldstream
Steel Hill 396
Yarra Glen
Yering
Yeringberg
Castella
Toolangi
Mt Slide 470
Andrew Hill 616
Beales Hill 377
Mt Robertson 607
State Forest
Bald Hill 357
Glenburn
Devlin Bridge
Twin Hills
Mt Dorothy
Sheehan Hills
Mt Caroline 506
Junction Hill 513
Old Mine Hill 513
Burt Hill
Dunn Hill 363
Minto Hills
The Three Sisters
Tunnel Hill
Grannie Hill
Flowerdale
Flagpole Hill
Hazeldene
Long Gully Hill 477
Strath Lookout
Tea River
Kary Creek
Gutter Creek
Paul Creek
Steels Creek
Yarra River
Plenty River
Diamond Creek
Darebin Creek
Running Creek
Arthurs Creek
Barber Creek
Gum Creek
Silver Creek
Rocky Creek
Middle Station Creek
Rellimeiggam Creek
Fly Tree Creek
Spring Creek
Carver Creek
Chyser Creek
Boggy Creek
Little Boggy Creek
Captain Creek
King Parrot Creek
Wallaby Creek
Scrubby Creek
Sunday Creek
Bruces Creek
Humevale Creek
Whittlesea-Yea Road
Whittlesea-Kinglake Road
Epping-Kilmore Road
Wallan-Whittlesea Road
Arthurs Creek Road
Kinglake Road
Heidelberg-Kinglake Road
Yan Yean Road
St Andrews Road
Healesville-Yarra Glen Road
Melba Highway
Maroondah Highway
Stringybark Creek
Kangaroo Ground-Eltham Road
Greensborough Highway
Plenty Road
Epping Road
Darebin Creek
Main Creek
Ridge Road
Bridge Inn Road
Doctors Gully Road
Kinglake National Park
VICTORIA RANGE
SHERWIN RANGE
PAUL RANGE
State Forest
Kinglake National Park
Kinglake Central
Kinglake East
Kinglake
Strathewen
Yarra Glen
Yering
Coldstream
Bend of Isles
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Waterford Park
The Mound 458
Minto Hills
The Three Sisters
Tunnel Hill
Grannie Hill
Flowerdale
Flagpole Hill
Hazeldene
Long Gully Hill 477
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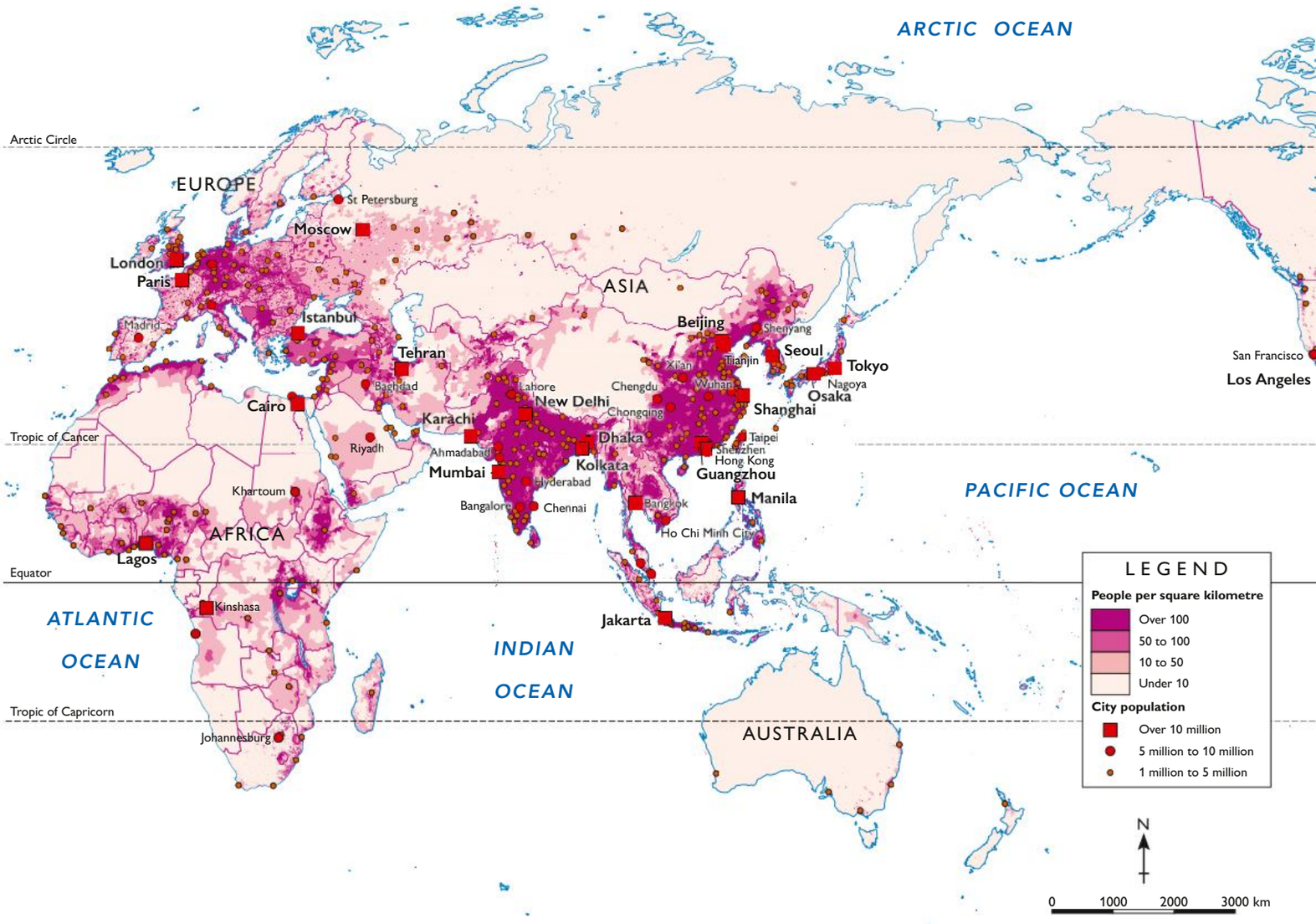
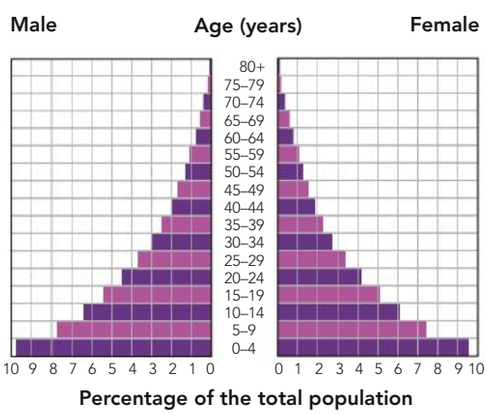
Wandong-Heathcote Junction
Wandong Regional Park
Sunday Creek Reservoir
Monument Hill 480
Clonbinane
State Forest
Wall Crossing
Waterford Park
The Mound 458
33
34
145°15'E
35
36

# Population

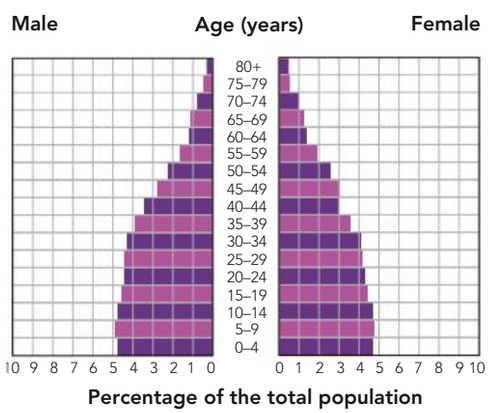
## WORLD: POPULATION DISTRIBUTION AND DENSITY



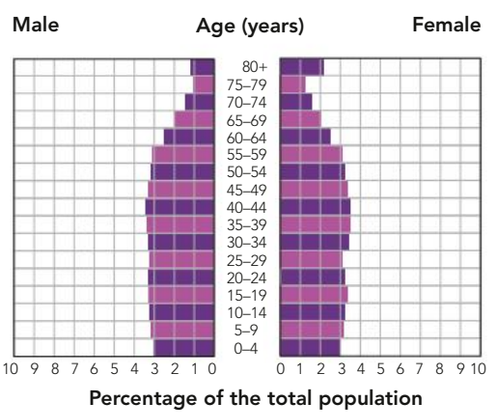

## NIGER: POPULATION PYRAMID




## INDONESIA: POPULATION PYRAMID




## AUSTRALIA: POPULATION PYRAMID

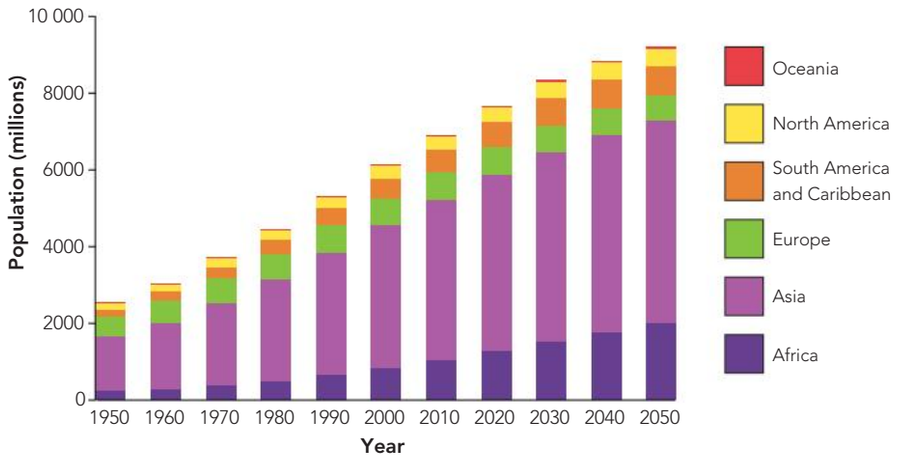



FAST FACTS

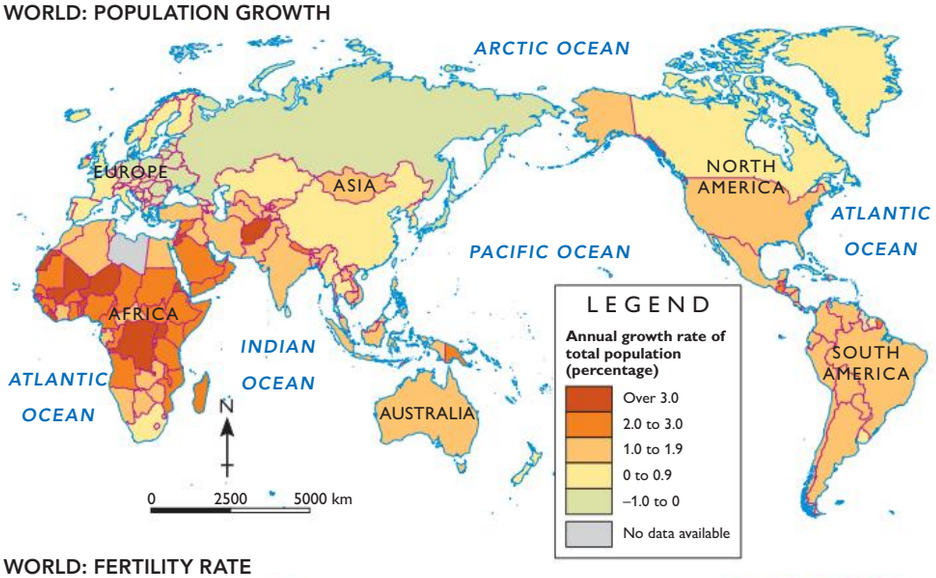
## World population growth

In 2012, five babies were born every second and two people died every second. As a result, the world's population grew by 78 million people. The growth of the world's population is slowing and may reach replacement level by as early as 2050.

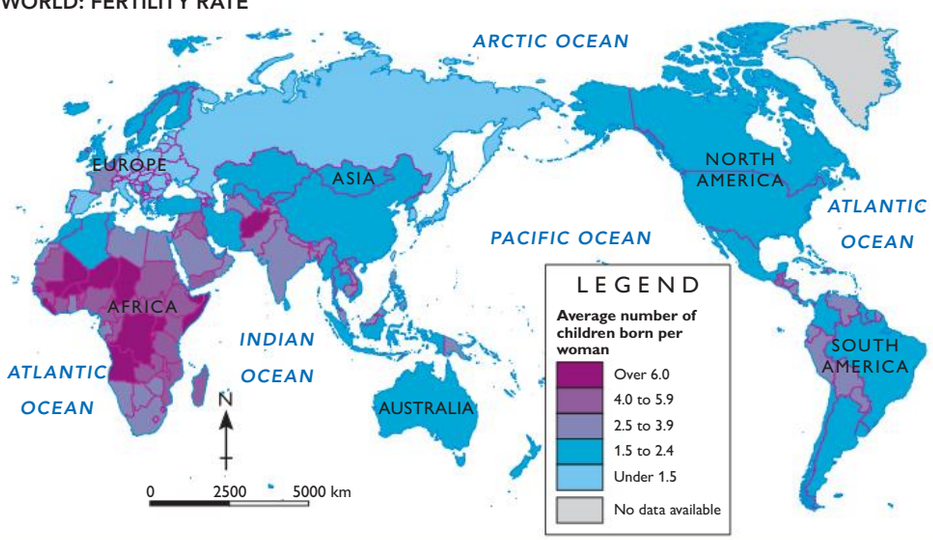
### WORLD: POPULATION GROWTH BY REGION



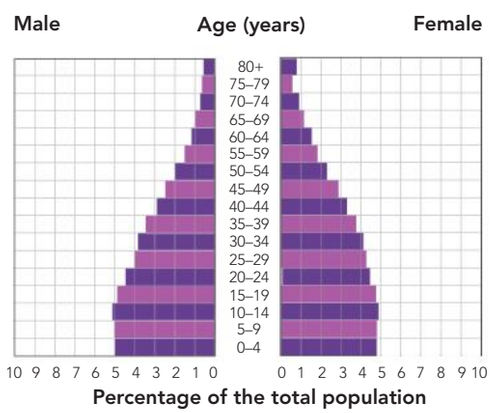

### WORLD: POPULATION GROWTH




### WORLD: FERTILITY RATE




### MEXICO: POPULATION PYRAMID

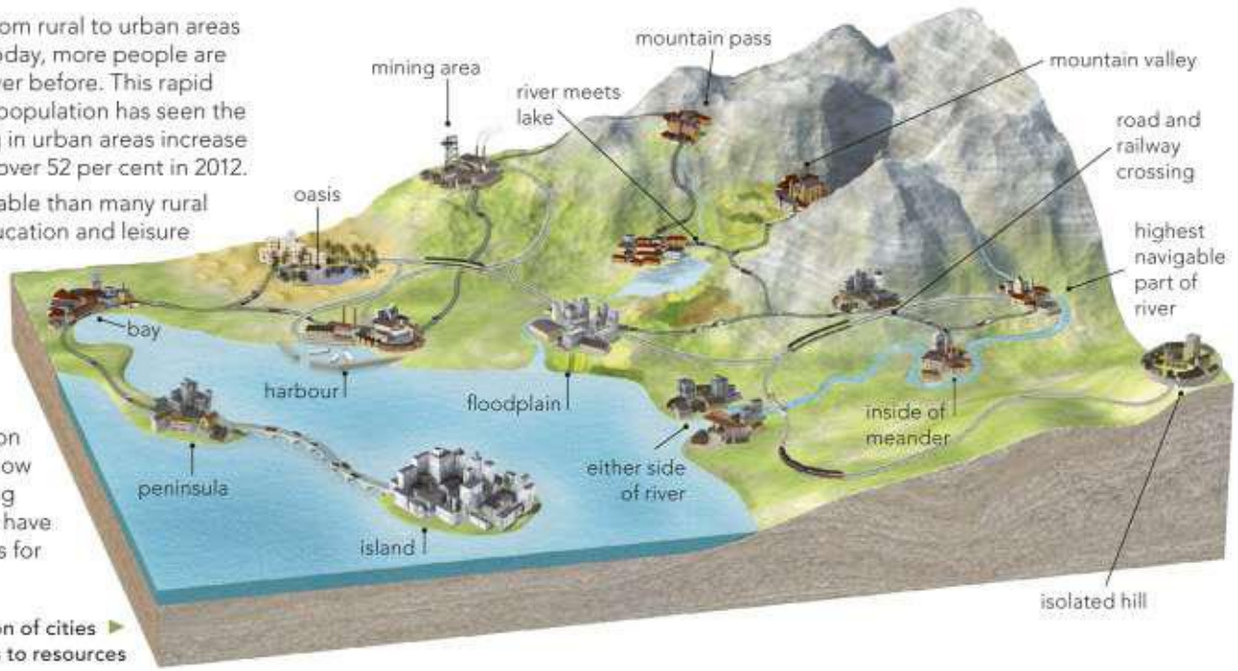


# Urbanisation

The movement of people from rural to urban areas is known as urbanisation. Today, more people are living in urban areas than ever before. This rapid urbanisation of the world's population has seen the percentage of people living in urban areas increase from 13 per cent in 1900 to over 52 per cent in 2012.

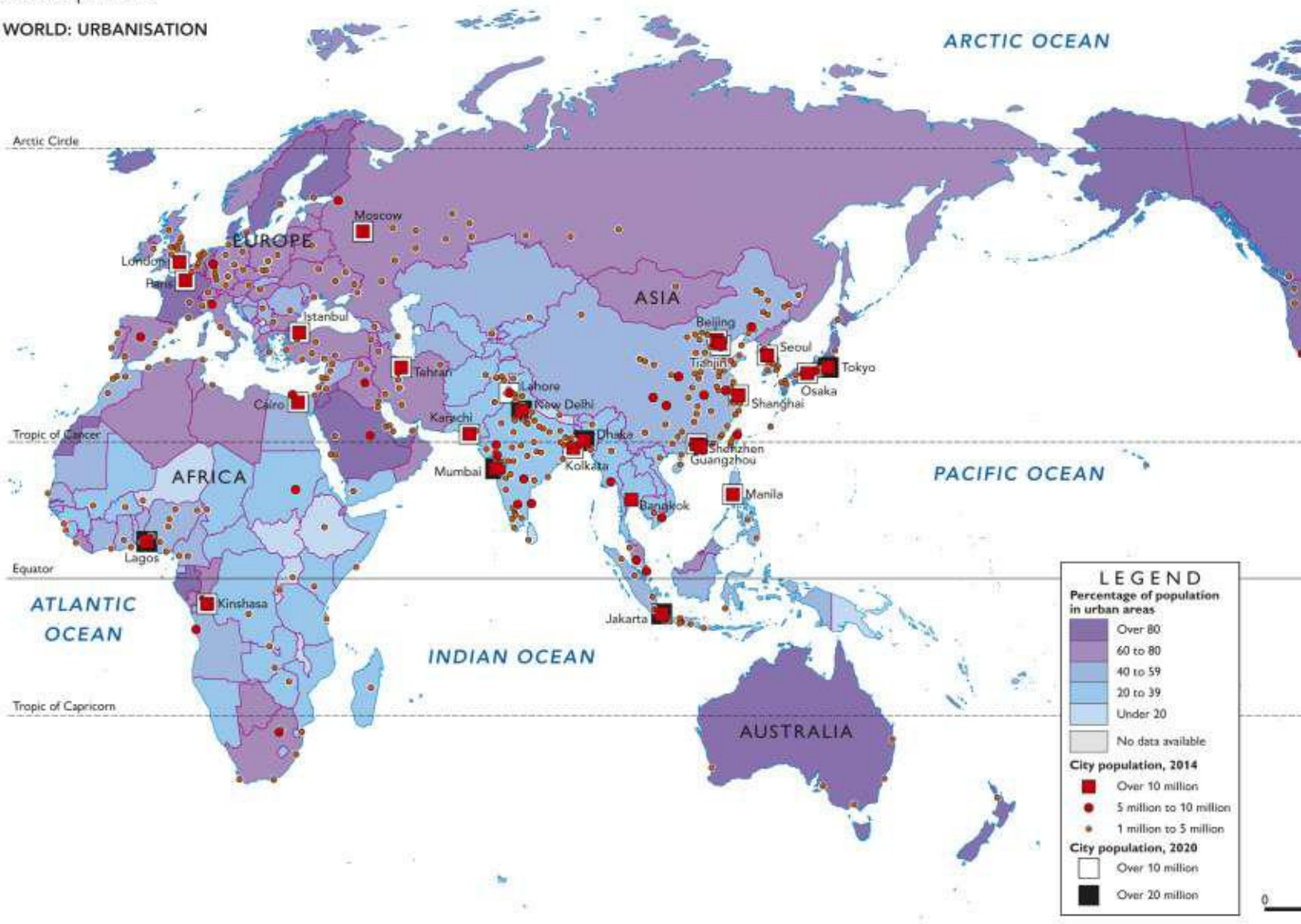
Cities are seen as more liveable than many rural areas as they offer jobs, education and leisure facilities. However, their rapid growth has also caused major problems including overcrowding, homelessness, poverty and pollution.

Megacities, with a population in excess of 10 million, are now mostly located in developing countries. Megacities often have problems providing services for their growing population.

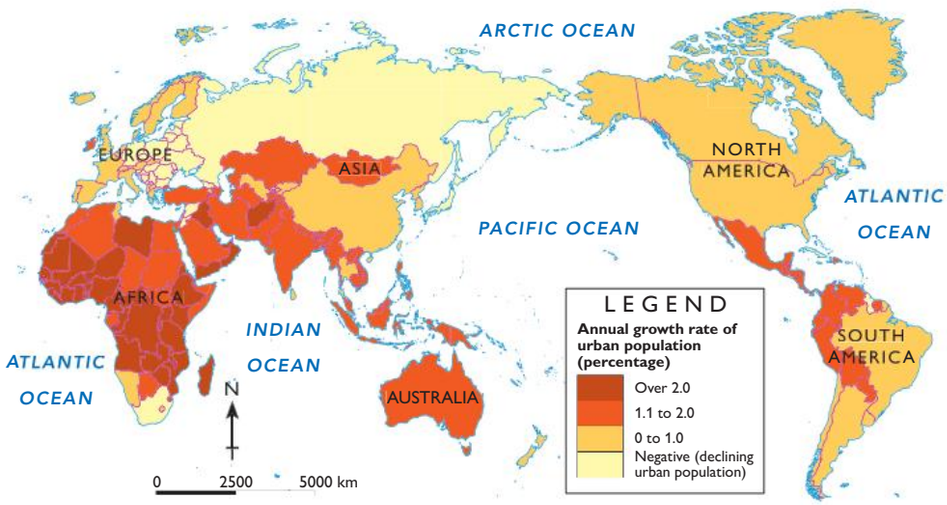



**Factors influencing the location of cities relate to their defence, access to resources and transportation.**

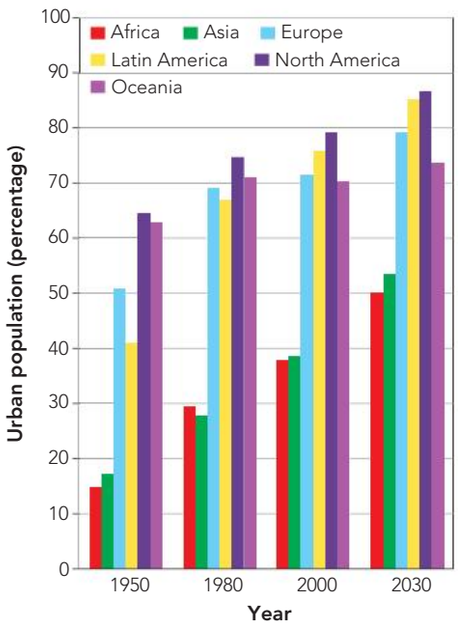
**WORLD: URBANISATION**

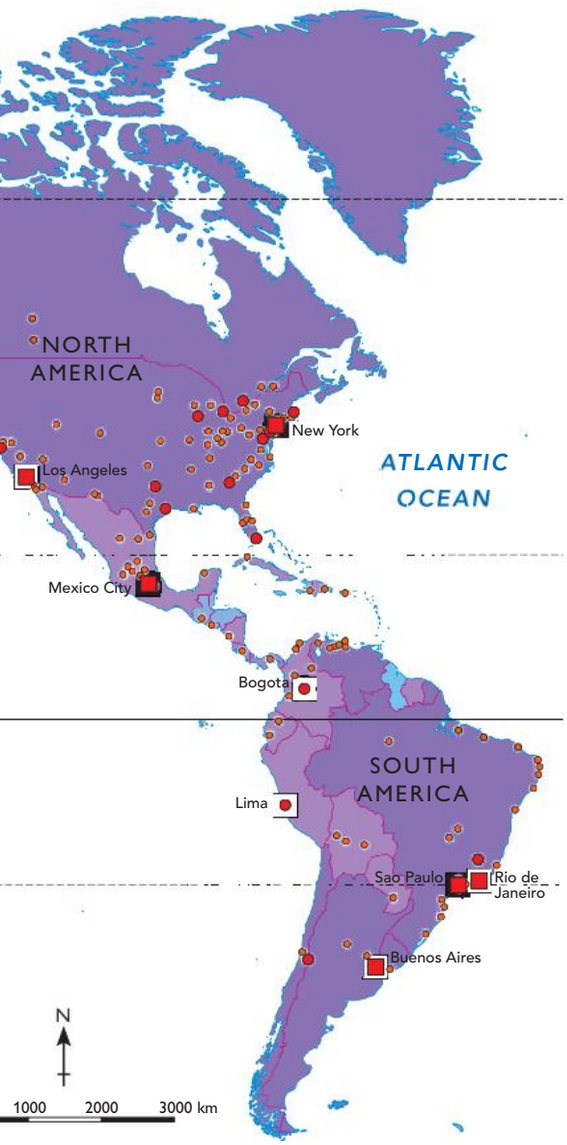


WORLD: URBAN GROWTH




WORLD: URBAN POPULATION BY REGION

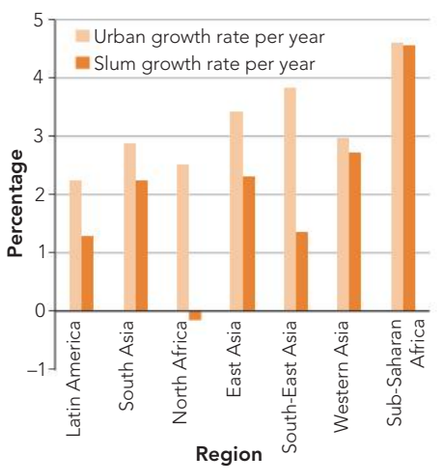



FAST FACTS

## Slum populations

Worldwide, it is estimated that there are currently around one billion people living in slums. Rapid urbanisation has caused a huge increase of slum populations, with makeshift housing, cramped living conditions, limited water and poor sanitation. In developing countries, many new arrivals to cities are forced to build temporary homes from scrap materials in slums located on the edge of cities.



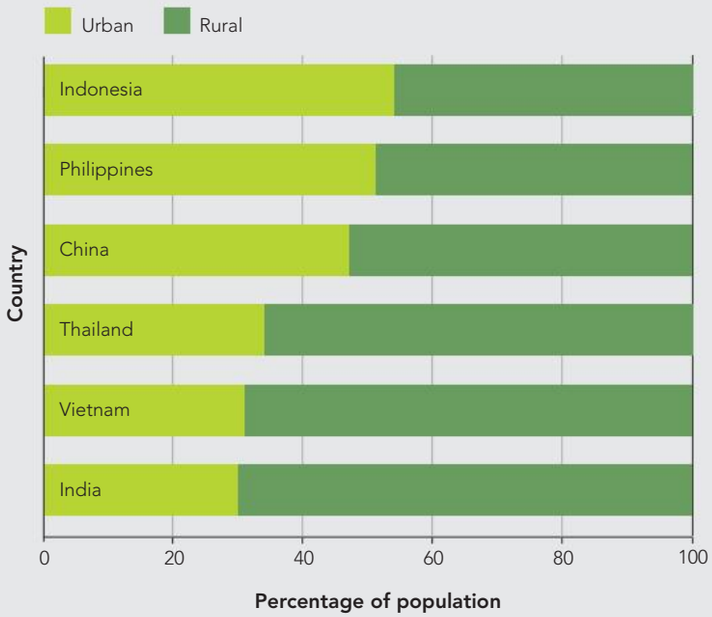

▲ Sixty per cent of Mumbai's population lives in slums.

CASE STUDY

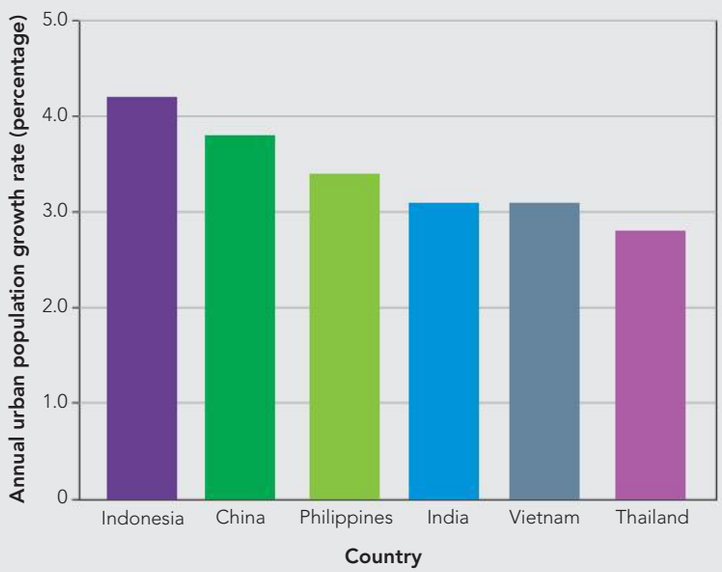
# Indonesia: An urbanised country

Indonesia is experiencing great economic and social change. In 1990, two-thirds of the population lived in rural areas in small villages and on farms. Today, less than half of the population lives in rural areas and by 2050 it is predicted that this figure will fall to one-third. Urbanisation has been responsible for rapid growth in the population and area of many Indonesian cities, and the rise of Jakarta as a megacity (a city with a population over 10 million). The number of cities with populations greater than one million has risen from three in 1980 to 11 in 2010. Although Jakarta is the nation's largest city, it does not have the highest population growth rate. Smaller cities with populations between 500 000 and one million are growing more rapidly. The central Sumatran city of Pekanbaru, (with a population of 950 000) is Indonesia's fastest growing city. Pekanbaru has a population growth rate of 10 per cent per year.

**SELECTED ASIAN COUNTRIES: URBAN AND RURAL POPULATION**

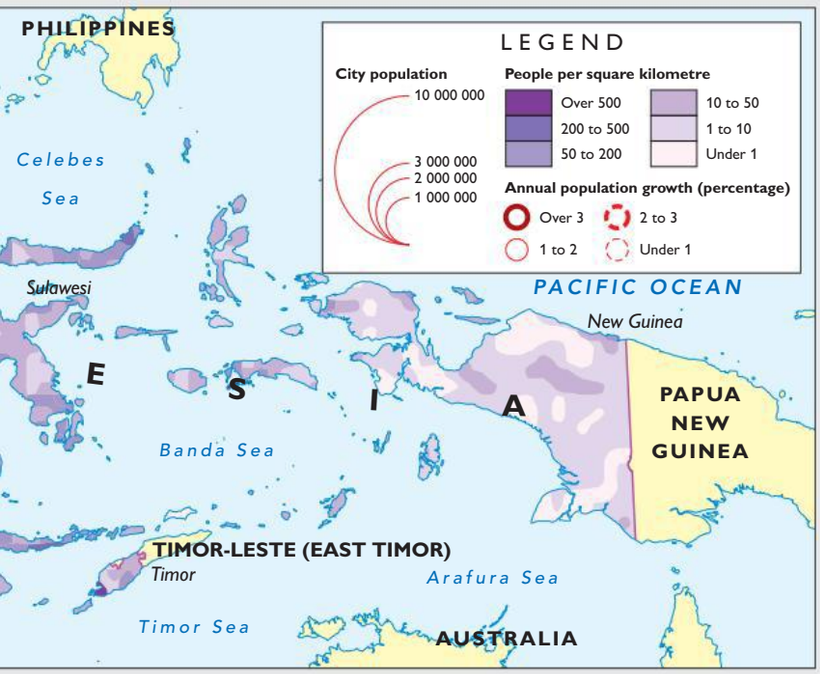



**SELECTED ASIAN CITIES: ANNUAL URBAN POPULATION GROWTH RATE**



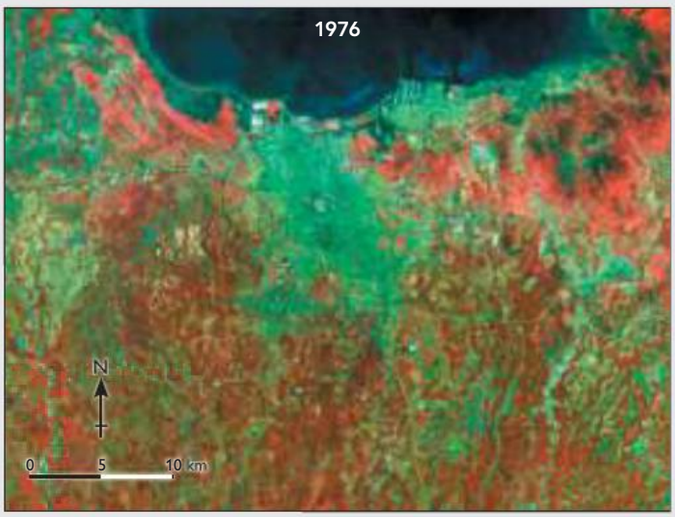

**INDONESIA: POPULATION DENSITY AND LARGEST CITIES**

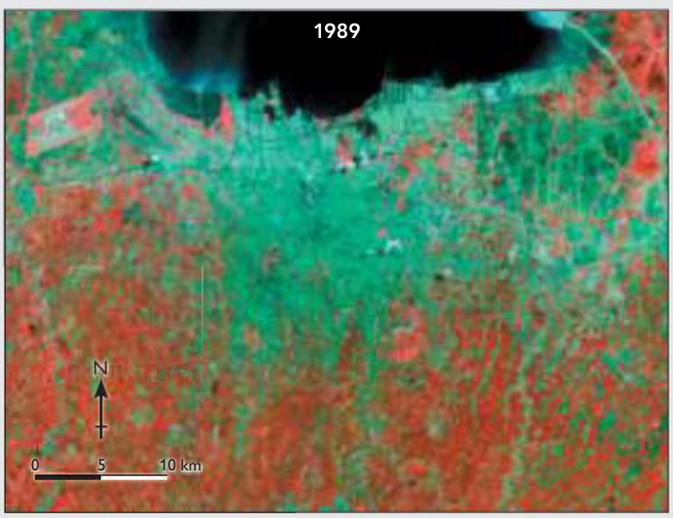

▲ Like the residents of many large cities, people in Jakarta face numerous problems. These include traffic congestion, flooding, and poor access to running water and electricity in slum areas. Despite these problems, hundreds of people arrive in the city every day to seek a better life, increasing the population and area of the city.




## Jakarta: Indonesia's megacity

Jakarta, Indonesia's capital, is located on the island of Java. In 2011, its population reached 10.1 million. In reality, however, the population of greater Jakarta (which includes the suburbs surrounding the metropolitan area) is close to 19 million.

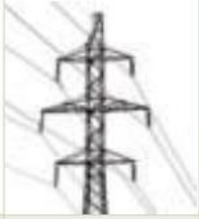


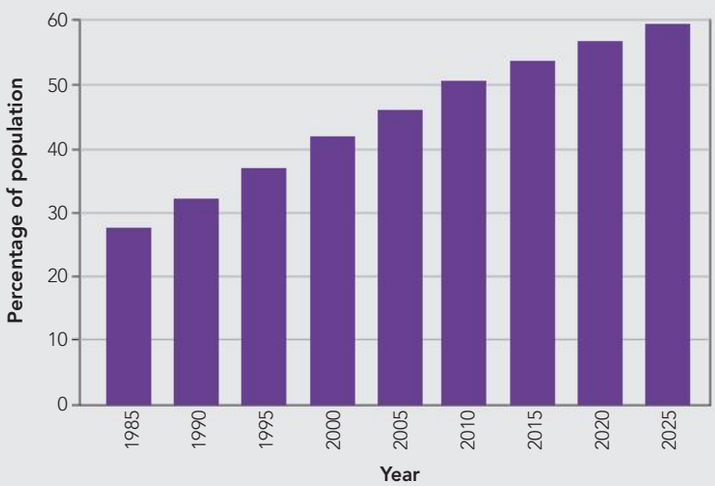


▲ Satellite images of Jakarta taken in 1976, 1989 and 2004. Urban areas appear as blue-green and vegetation as orange-red.

**INDONESIA: ACCESS TO SERVICES**

| | Households with improved sources of drinking water | Households with their own toilet | Households with reliable electricity supply |
|---|---|---|---|
| |  |  |  |
| URBAN AREAS (%) | 78.3 | 71.8 | 97.9 |
| RURAL AREAS (%) | 49.1 | 52.0 | 81.4 |

**INDONESIA: URBAN POPULATION**

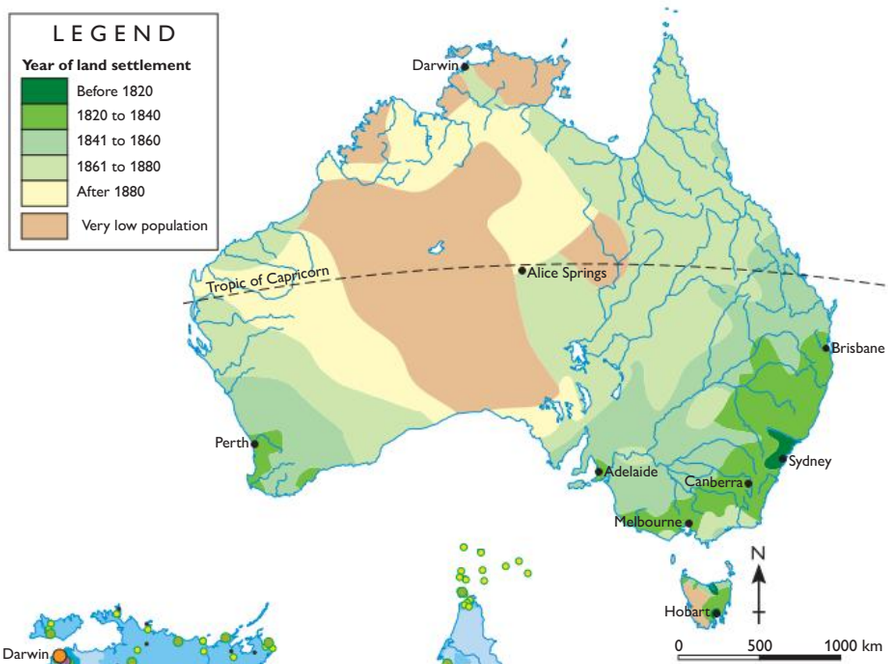


# Settlement patterns in Australia

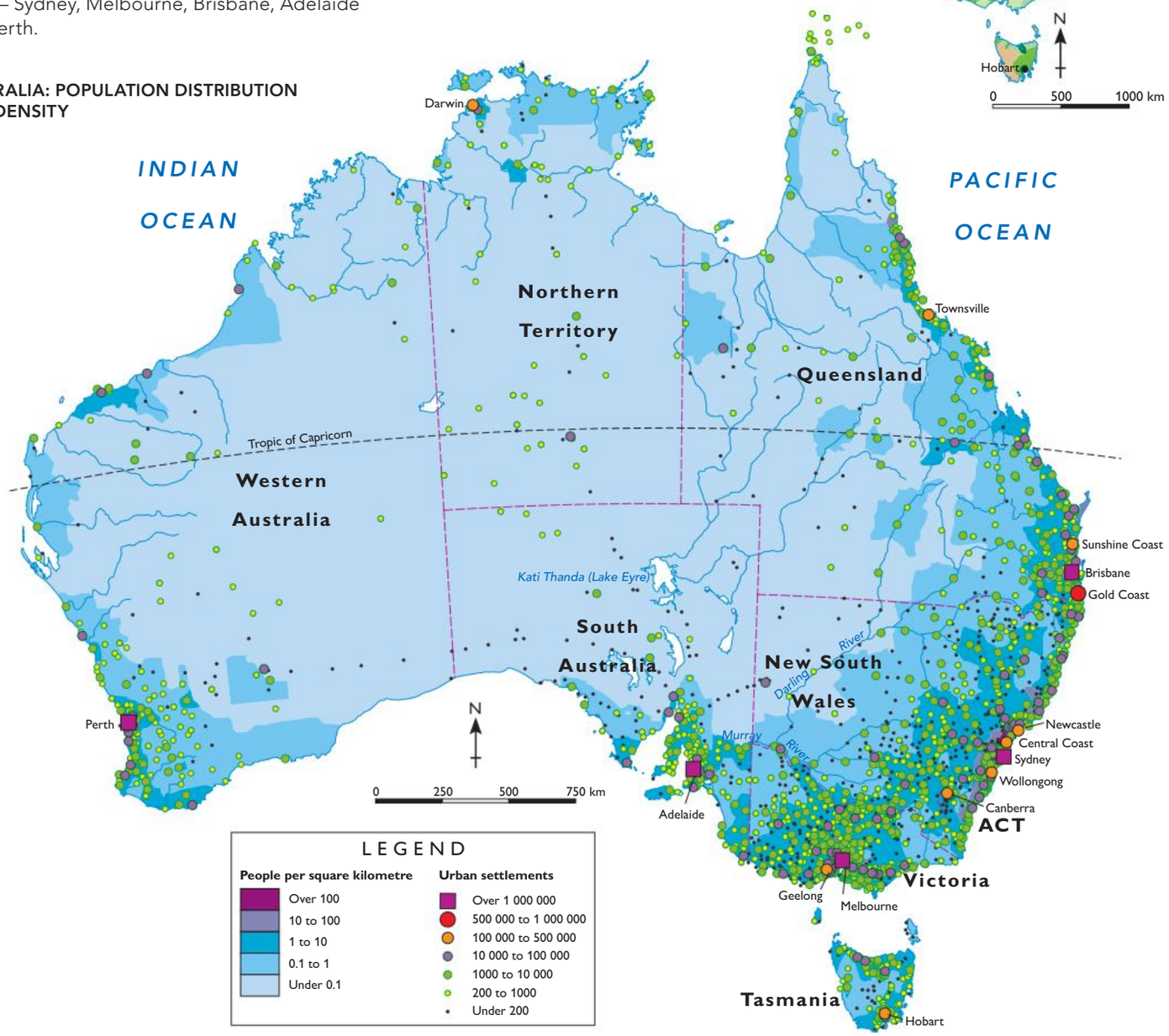
## Population distribution and density

Australia's population is more unevenly distributed than virtually any other country on Earth. Eighty-five per cent of the population lives in the south-east from Brisbane to Melbourne and the south-west of Western Australia – all within 50 kilometres of the coast. These were some of the first areas settled by Europeans as they had a reliable fresh water supply, temperate climatic conditions, fertile soils and access to a good harbour or other transport links. Very few people live in the centre of the continent. Our population density of just under three people per square kilometre is one of the lowest in the world. In addition, Australia is also one of the most urbanised countries in the world with nearly 90 per cent the population living in a town or a city. Of the 23.5 million people who live in Australia, more than 12 million reside in just five cities – Sydney, Melbourne, Brisbane, Adelaide and Perth.

AUSTRALIA: EUROPEAN LAND SETTLEMENT

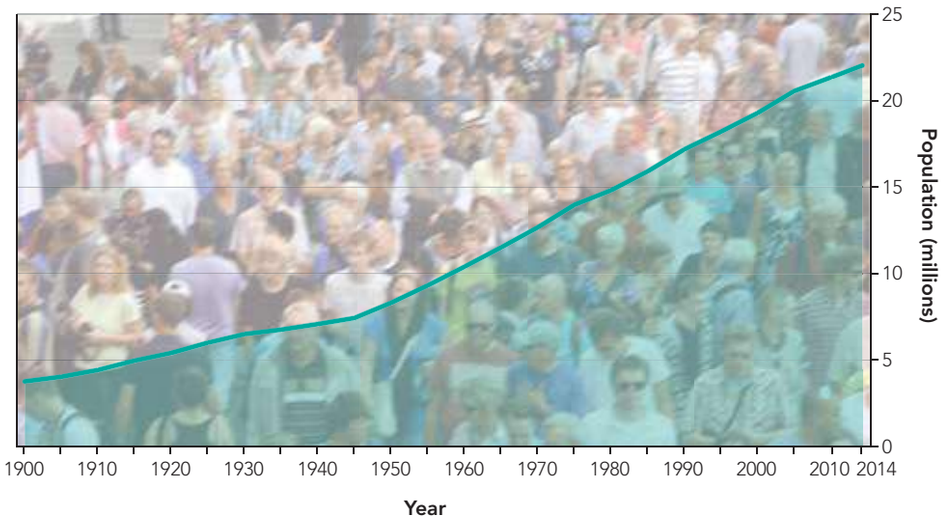



AUSTRALIA: POPULATION DISTRIBUTION AND DENSITY



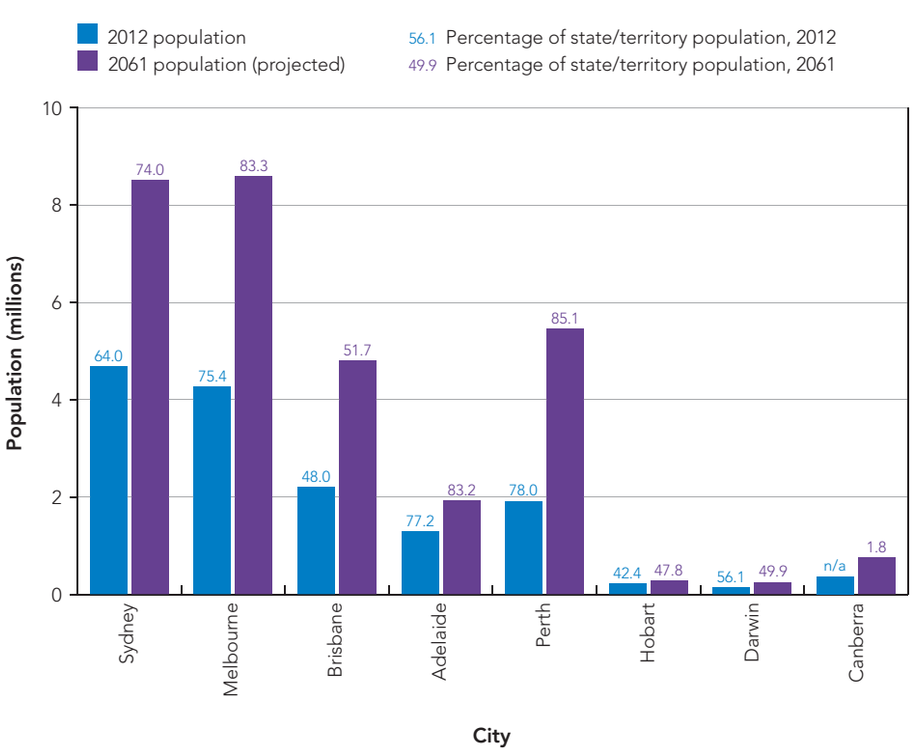
## Population growth

**AUSTRALIA: POPULATION GROWTH**




In 2014, the population of Australia reached 23.5 million – an increase of nearly 20 million people since 1900. By 2061, the Australian Bureau of Statistics (ABS) estimates that Australia's population will reach 41.5 million. It is also estimated that around 73 per cent of this growth will take place in our capital cities. This means that three out of every four Australians will live in a capital city. By 2053, the ABS also predicts that Melbourne will replace Sydney as the nation's largest city and that Perth will overtake Brisbane as the third most populated city. Even though these are projections, it is important that planning is in place for the provision of additional housing and infrastructure for the growing population. Possible environmental implications also need to be considered.

**AUSTRALIA'S CAPITAL CITIES: POPULATION 2012 AND 2061 (PROJECTED)**

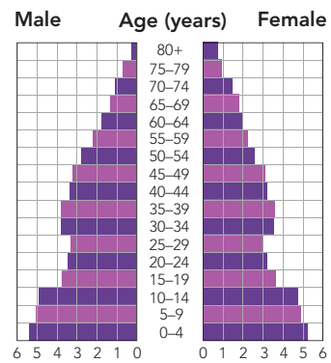



FAST FACTS

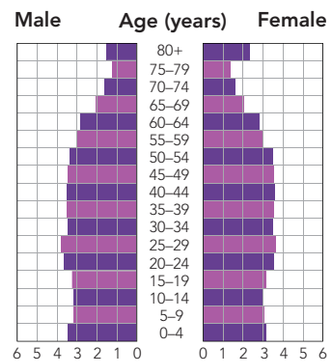
## Australia's population structure

The population pyramids below show changing population structure. In 1960, the triangular shape showed Australia's population was growing rapidly. The vase-shaped pyramid in 2011 indicates lower birth rates and slow population growth. In 2061, the top-heavy population pyramid shows an ageing population.

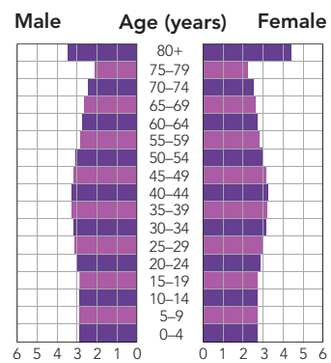
**AUSTRALIA: POPULATION PYRAMID, 1960**




**AUSTRALIA: POPULATION PYRAMID, 2011**

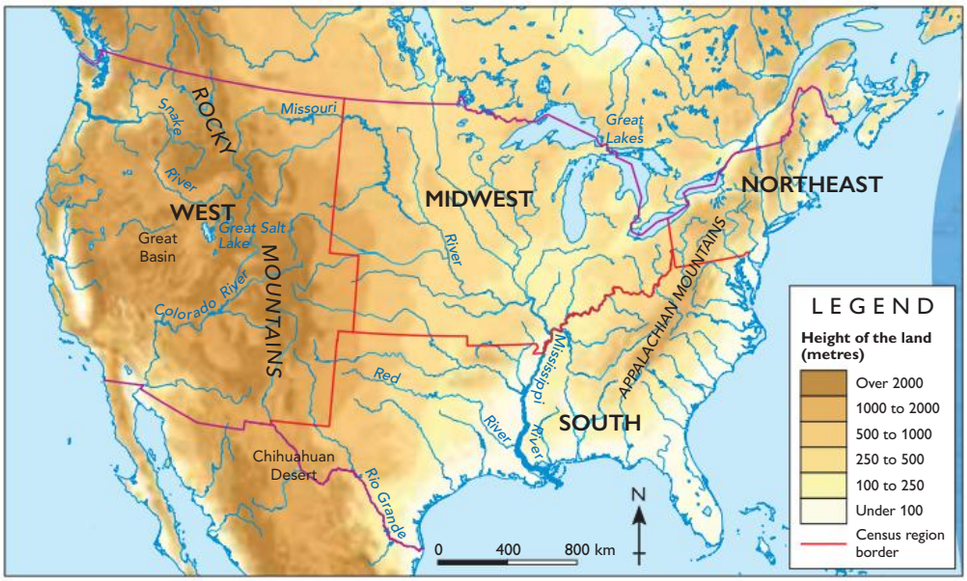



**AUSTRALIA: POPULATION PYRAMID, 2061**

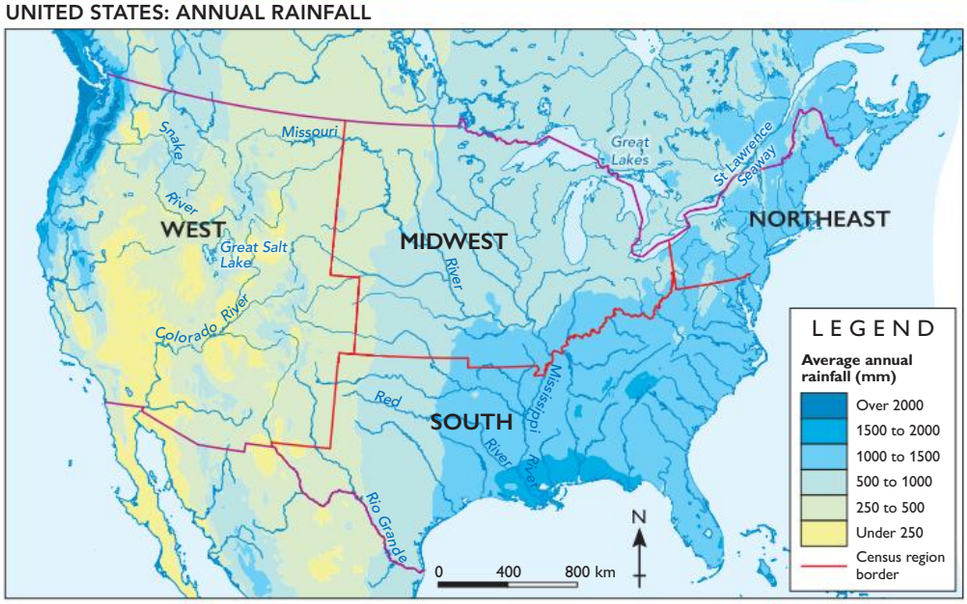


# Settlement patterns in the United States

UNITED STATES: PHYSICAL FEATURES




UNITED STATES: ANNUAL RAINFALL



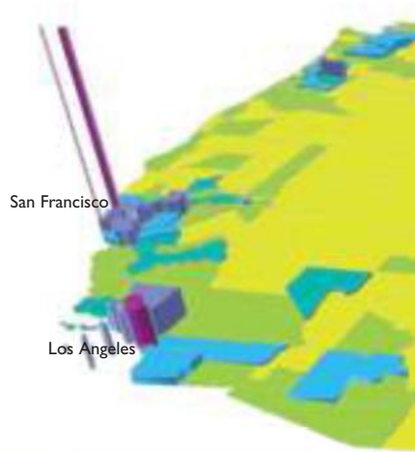

UNITED STATES: ENVIRONMENTS


Eighty-two per cent of the 314 million people in the United States (USA) live in urban areas. Like Australia, the population is not evenly distributed across the country. Some parts are dominated by enormous cities while other areas are virtually uninhabited.

## West

The American West is the most mountainous region of the USA. The Rocky Mountains dominate the area and the Coast Ranges force moist winds to drop their rain on the west coast. To the east of these ranges lies a large desert and semi-desert region. The West is the most sparsely settled area in the USA with just 19 people per square kilometre. It was the last area to be settled as the railroad gradually connected the West to the rest of the country. With a population of 13 million, Los Angeles on the west coast is the region's largest city and the second largest in the USA. About 25 per cent of the population of the West is Hispanic and most of these are Mexican.

UNITED STATES: POPULATION DENSITY




▲ The region's most densely populated areas are found between the Coast Ranges and the west coast, including the region's largest city, Los Angeles.

## Midwest

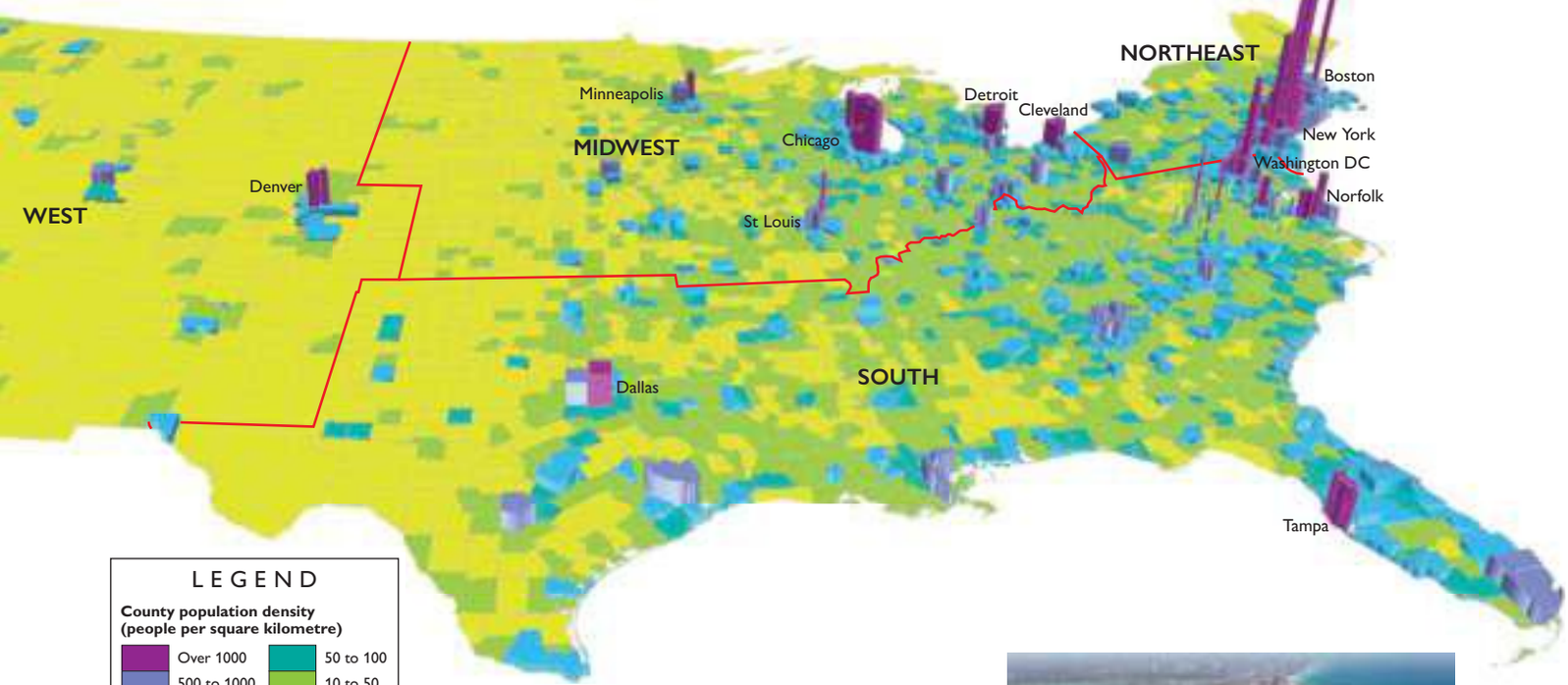
The Midwest region of the USA is characterised by low, flat land. It receives more rain than the West and is dominated by the Mississippi River system. As the nation's key agricultural region, the Midwest has a reasonably low population density of 31 people per square kilometre. The Great Lakes area has the highest population density. It became established as the home of heavy industry (particularly automobiles) in the USA. It has also developed as a hub for transportation by water, rail and road. Chicago, located on Lake Michigan, is the largest city.

◀ The Midwest has developed as the USA's breadbasket. Farmers in this region produce cereal crops such as corn, wheat and oats.

## Northeast

The first Europeans settled in the Northeast of America. This region has only five per cent of the land area of the USA, but contains 20 per cent of its population. The Northeast is the USA's most economically developed and densely populated region, with an average of more than 116 people per square kilometre.

▲ New York, located on the island of Manhattan, is the Northeast's and America's largest city with a population of nearly 20 million people.




*Horizontal scale varies on this oblique view – New York to Los Angeles is about 4000 kilometres.*

## South

The South receives the highest rainfall in the USA. Most of the region has a hot and humid climate. Historically, the South relied heavily on agriculture and was the centre of the slave trade, which imported African slaves to work on plantations. Today, almost 55 per cent of African-Americans in the USA live in the South. The South has since become more industrialised and is now among the fastest growing areas in America. The Dallas–Arlington–Fort Worth metropolitan area is the region's largest with a population of 6.3 million. While there has been rapid economic growth, the South has a higher poverty rate than the American average.

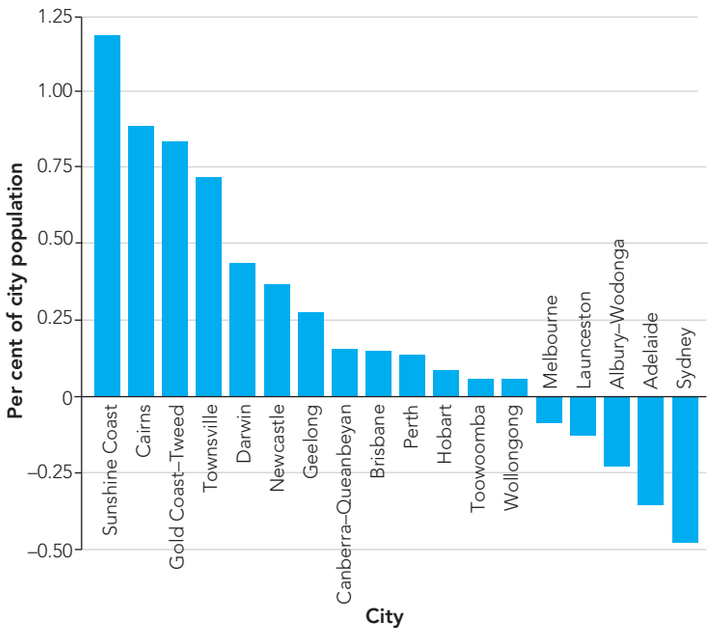
▲ Miami in Florida has developed as an important tourist destination and retirement location in the USA.

# Internal migration in Australia

Australians are some of the world's most mobile people. From 2006 to 2011, nearly 40 per cent of the nation's population changed their place of residence. This movement of people within Australia (known as internal migration) is one of the major reasons for population growth or decline in particular areas. The effect of internal migration on population growth or decline can be measured by calculating the difference between in migration and out migration. This is called net internal migration.

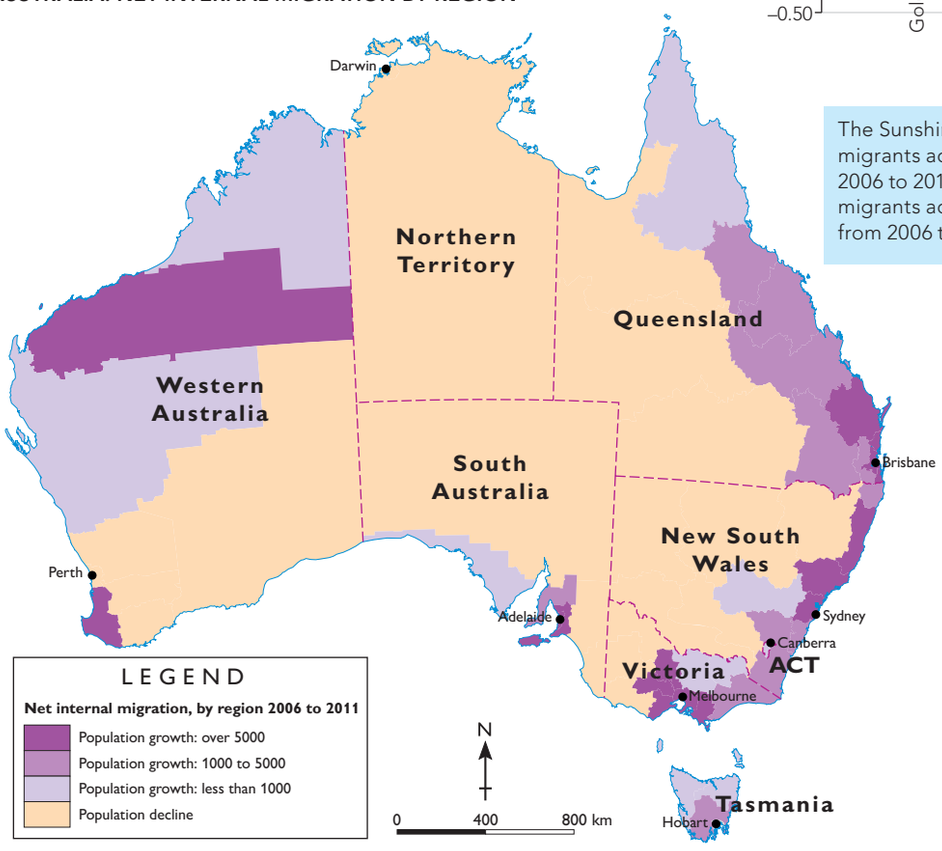
Australia's coastal towns and cities are the destinations for most of Australia's internal migrants. People seeking a sea change are choosing to retire to the coast, work from home or commute to a nearby city. Mining centres in Queensland and Western Australia are also attracting people. Even though many workers fly in and fly out from major cities, these areas are still experiencing net internal migration gains. In recent years, many of Australia's agricultural regions and small rural towns have experienced difficult economic times, forcing farmers and their families to leave the area. This has resulted in net internal migration losses.

**AUSTRALIA: NET INTERNAL MIGRATION BY MAJOR CITY, 2006 TO 2011**

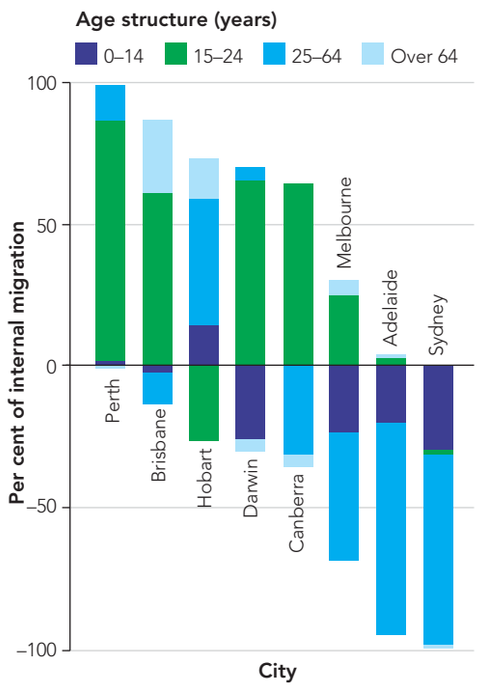



The Sunshine Coast was the highest net gainer, with internal migrants accounting for 1.19 per cent of the population from 2006 to 2011. Sydney was the highest net loser, with internal migrants accounting for –0.48 per cent of the population from 2006 to 2011.

**AUSTRALIA: NET INTERNAL MIGRATION BY REGION**



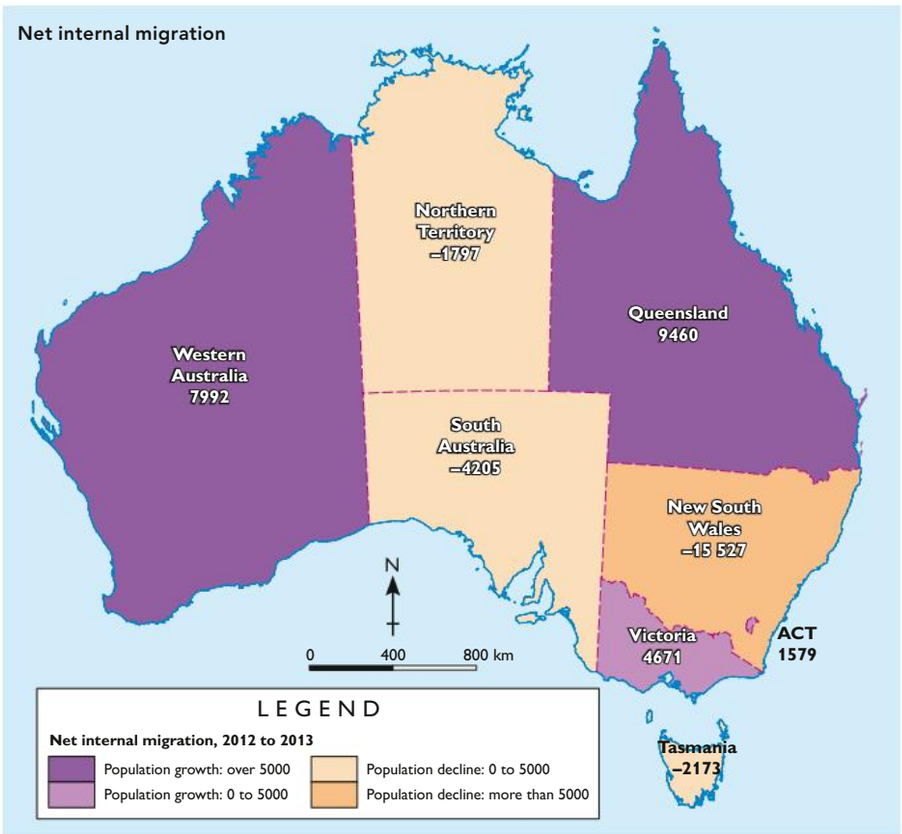

**AUSTRALIA: AGE STRUCTURE FOR NET INTERNAL MIGRATION BY MAJOR CITY, 2006 TO 2011**

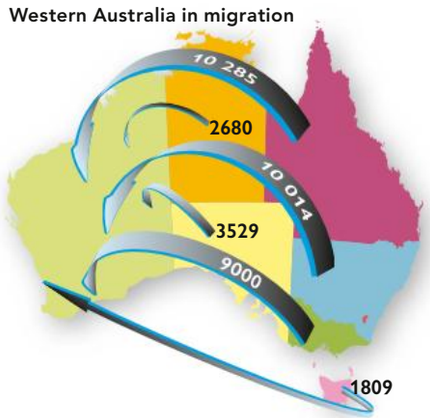


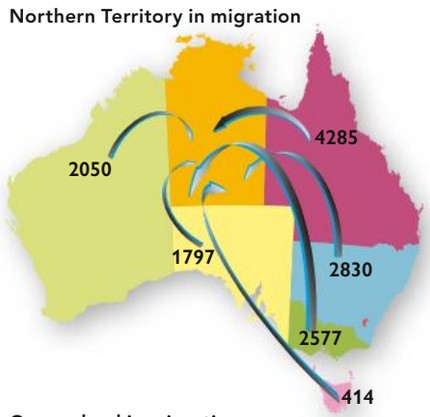

Age structure for net internal migration is different for each city. Sydney is losing people from all age groups. Perth is a net gainer across all age groups.

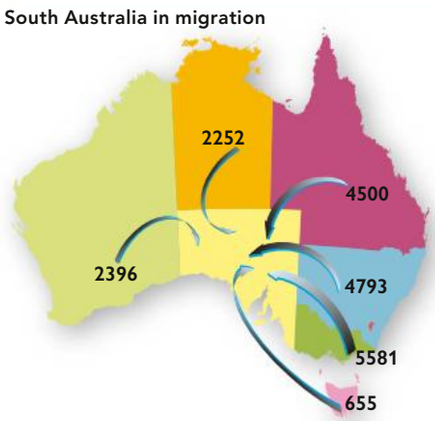
Noosa Heads is a popular retirement location on Queensland's Sunshine Coast.

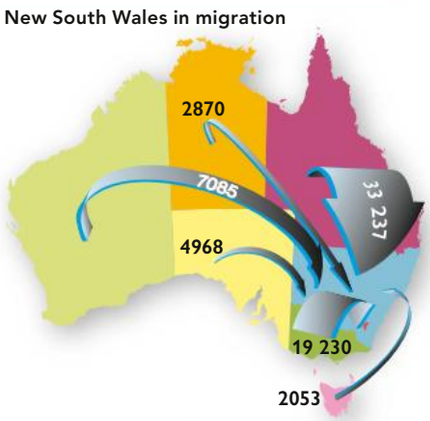
## AUSTRALIA: INTERNAL MIGRATION BY STATE/TERRITORY

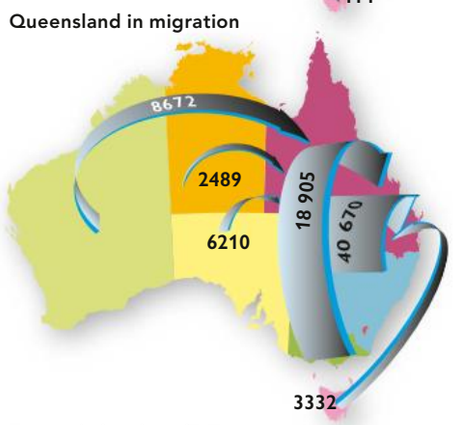


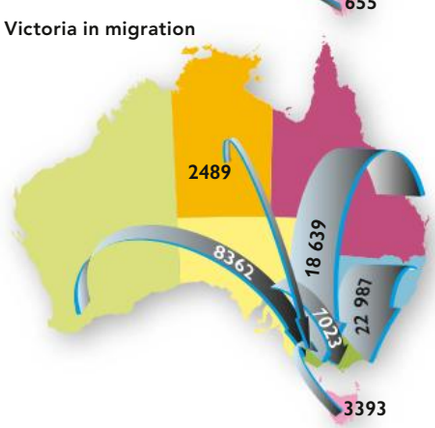



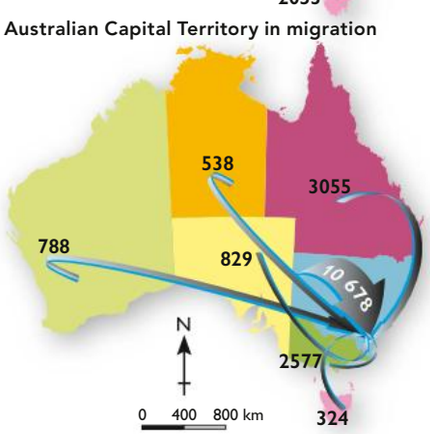



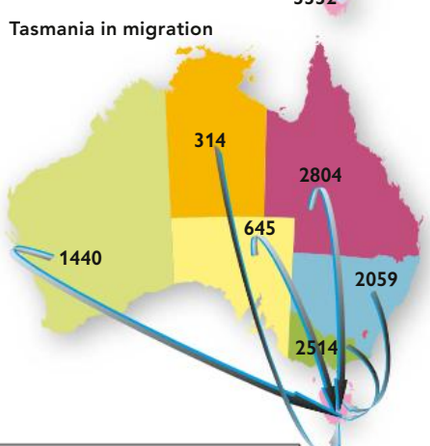



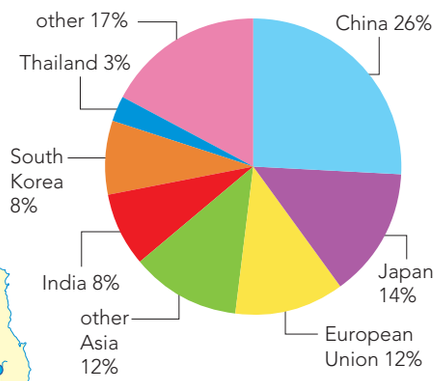



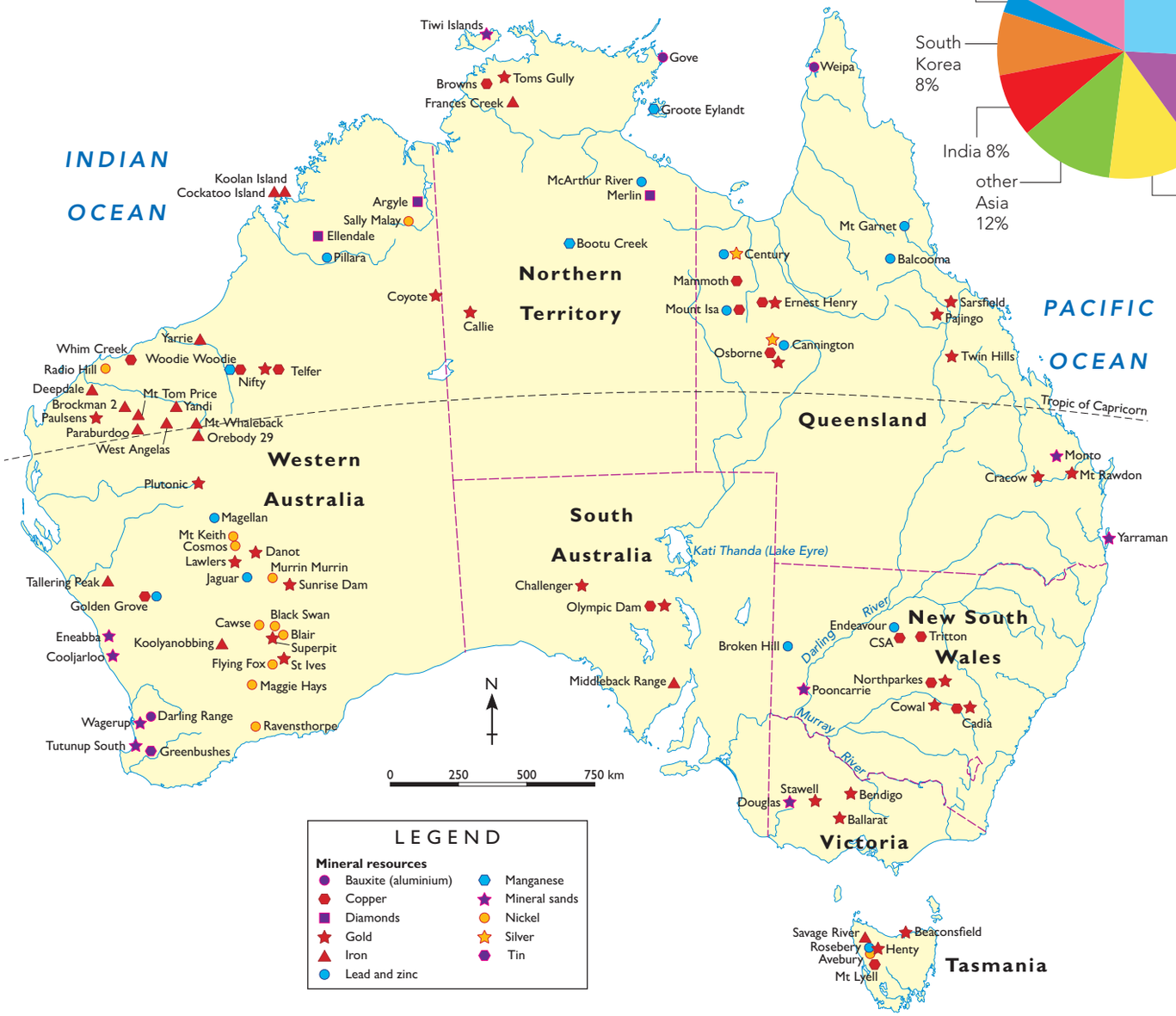

# Mineral and energy production in Australia

Australia is one of the world's leading mineral resources nations. It is the largest producer of industrial diamonds and lead. It is the second largest producer of zinc and the third largest producer of gold, iron ore and manganese. Mining accounts for 55 per cent of Australia's export income. Between 2007 and 2011, the value of mining exports doubled.

**AUSTRALIA: DESTINATION OF MINERAL EXPORTS**




**AUSTRALIA: MINERAL RESOURCES**



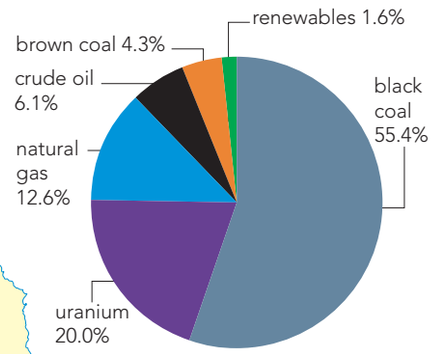

## Employment growth in mining

Strong growth in mining has resulted in a large increase in the number of people employed in the industry. In 2011, the Australian Bureau of Statistics (ABS) identified 10 'booming' mining towns (eight of the 10 towns were in the Pilbara in north-west Western Australia and the Bowen Basin in central-eastern Queensland). This boom has led to the migration of workers from other regions of Australia. Many of these workers fly in and fly out of mining towns, living in the area temporarily while they are rostered on for work. Their usual place of residence is often a capital city or a large coastal town such as Perth, Brisbane and Mackay. As a response to this influx of workers, improved infrastructure and services have developed in many of these centres.

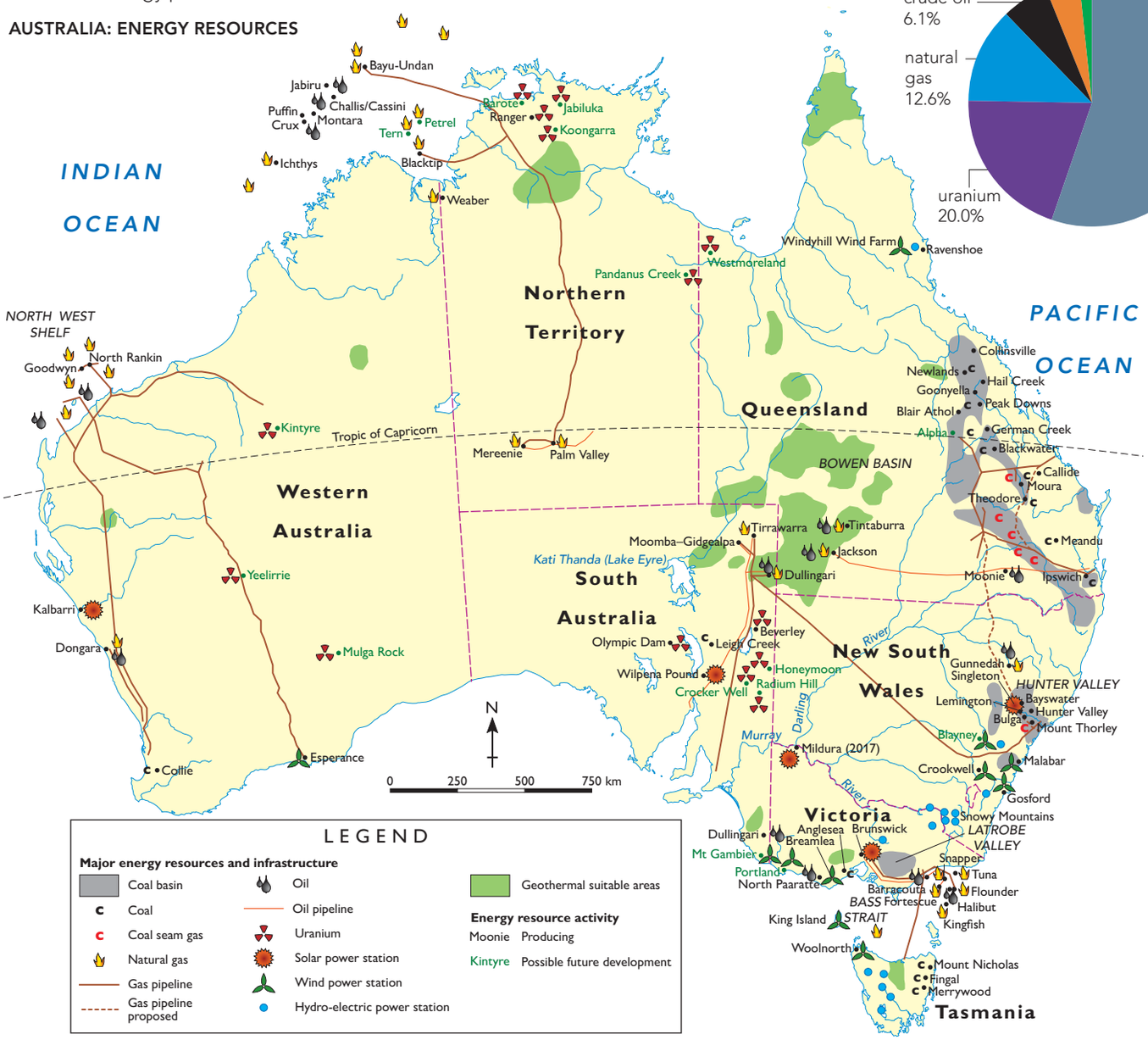
Located in the Pilbara, Western Australia, Mt Whaleback ► is the world's largest single open-cut iron ore mine.

The main fuels produced in Australia are black coal, uranium and natural gas. Australia is the world's largest exporter of coal – most of this coal is exported from the reserves in the Bowen Basin in Queensland. Renewables accounted for fewer than two per cent of Australia's energy production in 2011.

**AUSTRALIA: ENERGY RESOURCES**

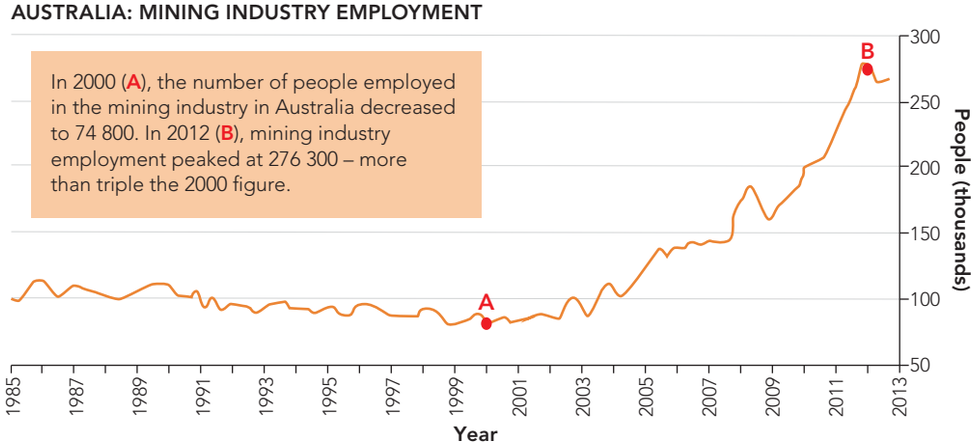



**AUSTRALIA: ENERGY RESOURCES**




**AUSTRALIA: MINING INDUSTRY EMPLOYMENT**

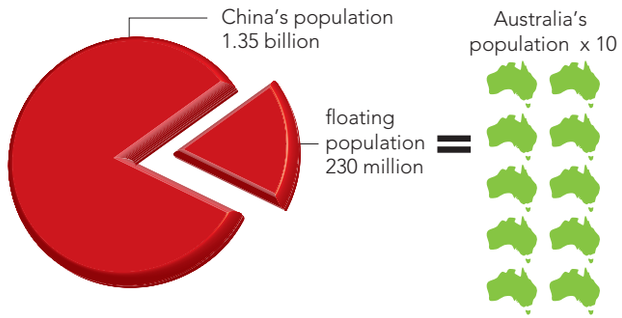
In 2000 (A), the number of people employed in the mining industry in Australia decreased to 74 800. In 2012 (B), mining industry employment peaked at 276 300 – more than triple the 2000 figure.



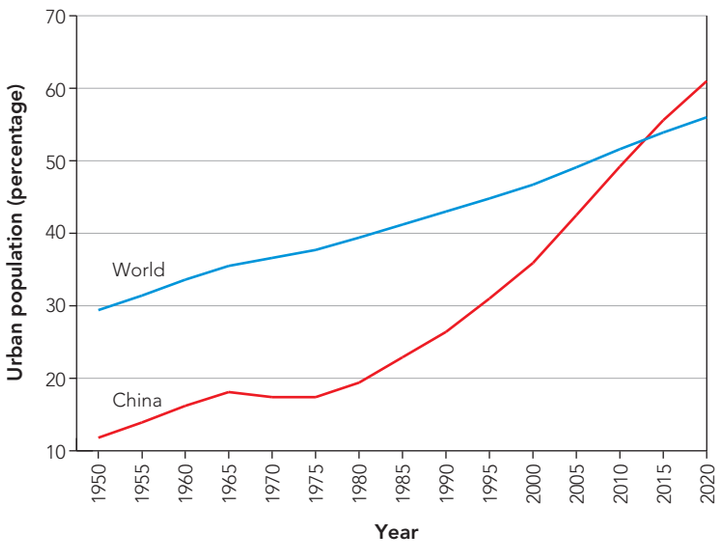
# Internal migration in China

China's huge economic expansion over the last 10 years has resulted in the largest internal migration of people in history. Millions of rural migrants have left their homes and relocated to cities. Most of these cities are located on the east coast – the centres of greatest economic growth and opportunities. The Chinese Government estimates that the country has a 'floating population' of 230 million (17 per cent of the total population of China) who are registered as living in a rural area, but who live and work in a city. A further 300 million people from rural areas are expected to move to cities and towns in the next three decades when China's urban population is predicted to reach one billion.

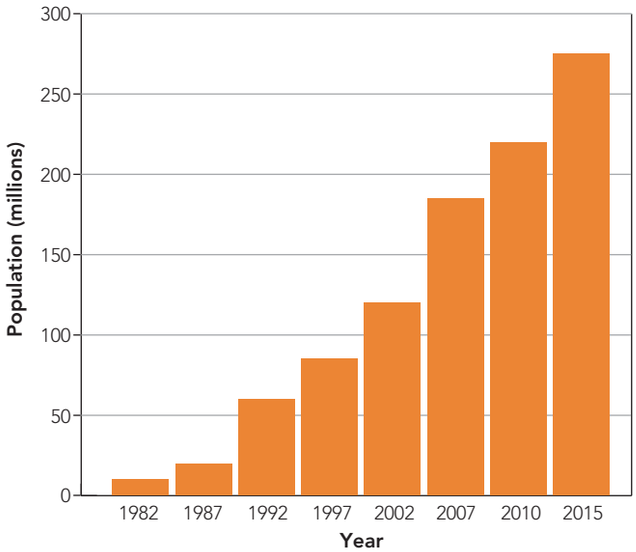
**CHINA AND AUSTRALIA: POPULATION COMPARISON**




**WORLD AND CHINA: URBAN POPULATION**




**CHINA: FLOATING POPULATION**



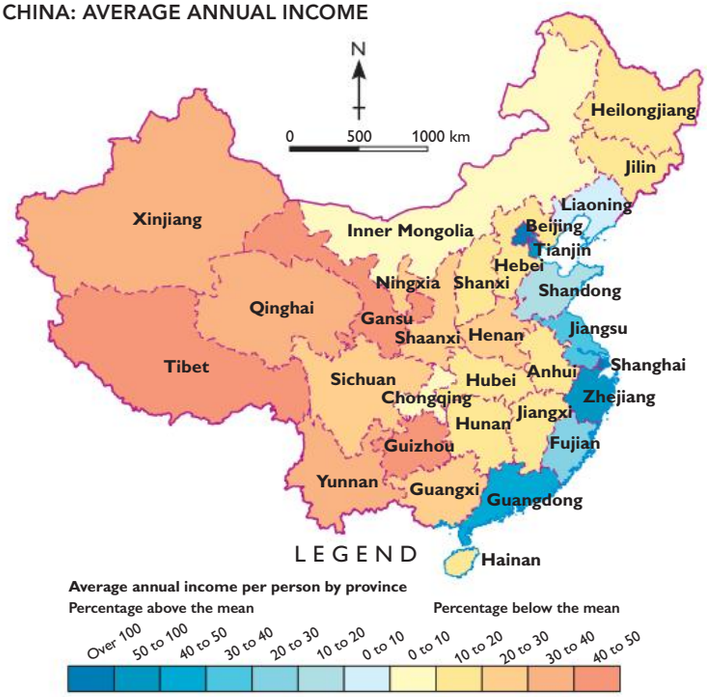

▲ Shenzhen is China's fifth largest city. In 2010, its population reached over 10 million – more than 10 times larger than its population in 1990. It is estimated that about 80 per cent of Shenzhen's population are migrants from rural areas across China.

**CHINA: POPULATION OF 10 LARGEST CITIES**

| CITY | POPULATION | | |
|---|---|---|---|
| | 1990 | 2000 | 2010 |
| Shanghai | 8 205 600 | 15 758 900 | 22 315 400 |
| Beijing | 7 362 400 | 8 503 300 | 11 716 000 |
| Tianjin | 5 804 000 | 8 146 100 | 11 090 300 |
| Guangzhou | 3 918 000 | 8 524 900 | 11 070 700 |
| Shenzhen | 875 200 | 7 008 800 | 10 357 900 |
| Wuhan | 3 832 500 | 8 312 800 | 9 785 400 |
| Dongguan | not available | 6 445 800 | 8 220 200 |
| Chengdu | 3 483 900 | 5 267 800 | 7 677 100 |
| Chongqing | 3 122 800 | 6 158 800 | 7 457 600 |
| Foshan | 429 400 | 5 337 700 | 7 194 300 |

## CHINA: MIGRATION FLOWS AND HUMAN DEVELOPMENT INDEX


## CHINA: AVERAGE ANNUAL INCOME




## CAUSES AND OUTCOMES OF INTERNAL MIGRATION IN CHINA

### Negative outcomes

- Overpopulation in provincial cities
- Increased demand on services such as water, electricity and sanitation
- Increased crime
- Depopulation of rural areas
- Separation of families

### Causes

Poverty

Employment

Education

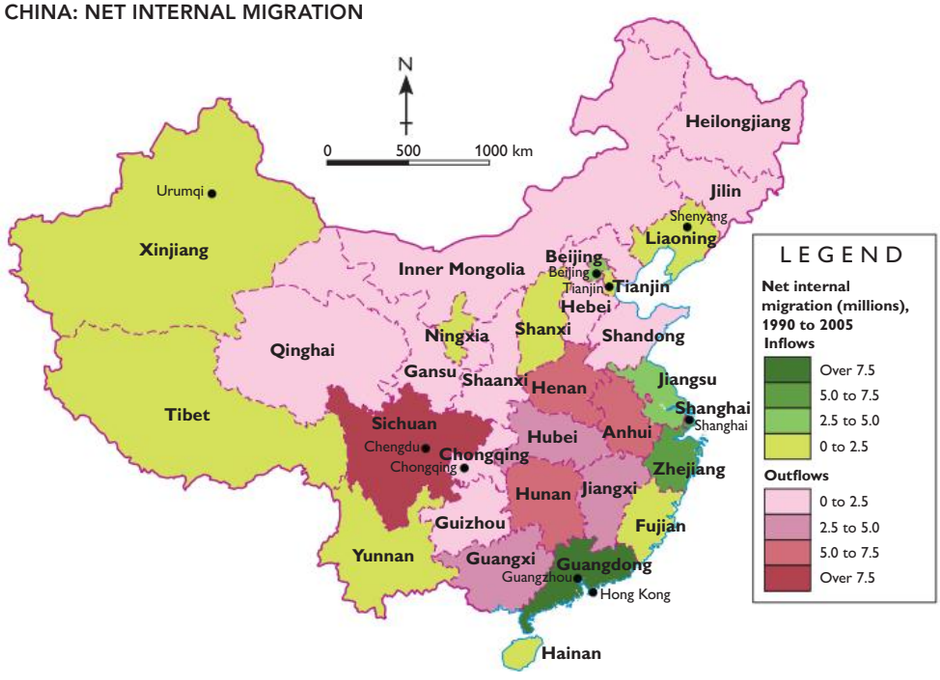
Standard of living

Political fears

### Positive outcomes

- Increased income and reduction in poverty
- Increased supply of labour in urban areas
- Access to education
- Higher standard of living
- Acquisition of new skills

## CHINA: NET INTERNAL MIGRATION



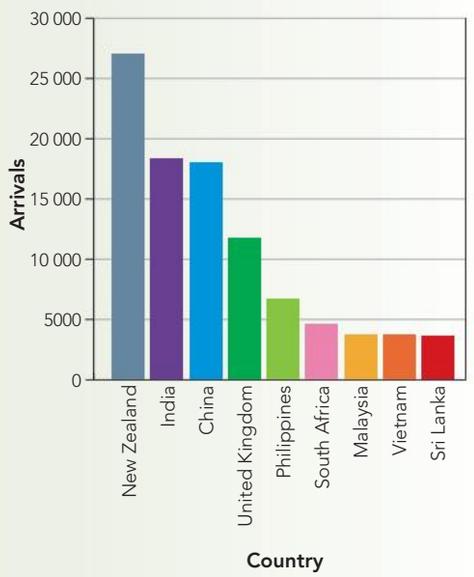

▲ Chinese female workers making toy cars in a factory in Guangzhou, Guangdong province.

# International migration to Australia

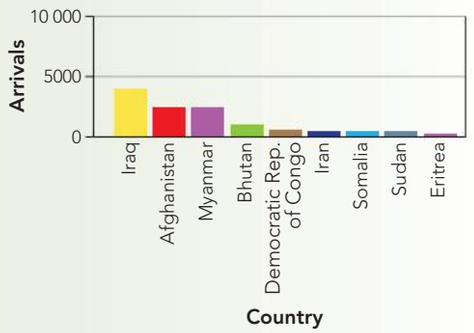
Australia is a multicultural nation – that is, a nation of many cultures. Australia's cultural diversity is due mainly to our history. Our population is made up of Indigenous peoples, the descendants of our colonial past, and migrants from the world's many countries and cultures. In 2013, 28 per cent of Australia's population had been born overseas in more than 200 countries.

Permanent international migrants come to Australia though the migration program (for skilled and family migrants) or through the humanitarian program (for refugees who have been forced to leave their home country). In 2013, just under 190 000 migrants came to Australia through the migration program. Nearly 70 per cent of these were skilled, with the remaining people joining family members already in Australia. In recent years, Indian-born migrants have accounted for the largest increase in arrivals. In 2011, just over 10 000 Indian-born migrants settled in Australia compared with 18 000 in 2013. Australia's humanitarian program provided protection for 12 500 refugees in 2013.

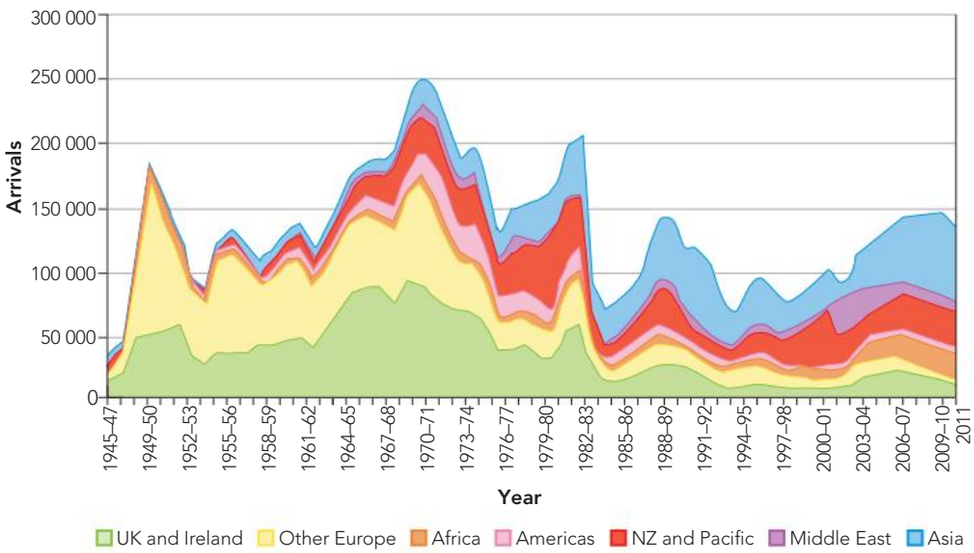
**AUSTRALIA: SETTLER ARRIVALS BY COUNTRY OF BIRTH, 2013**



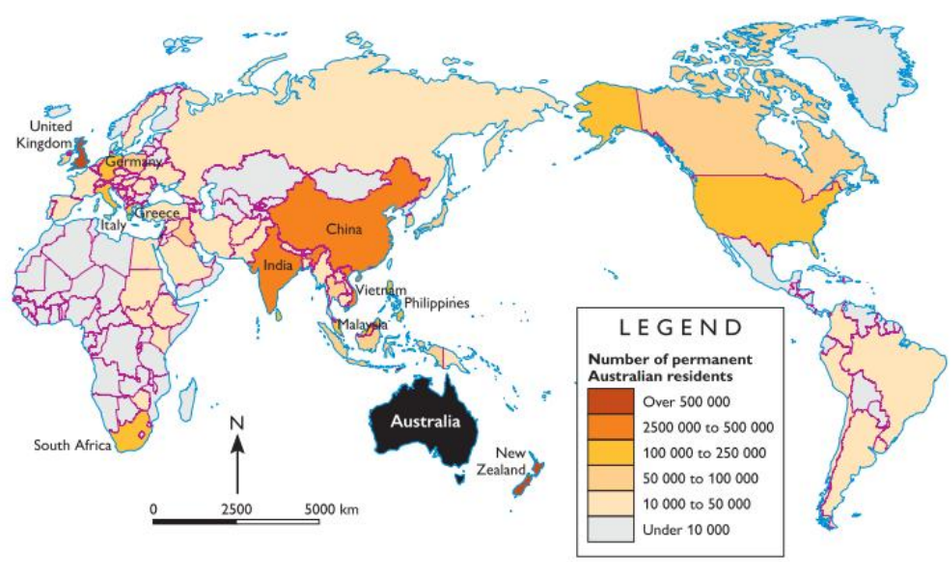

**AUSTRALIA: LEGAL REFUGEE ARRIVALS BY COUNTRY OF BIRTH, 2013**



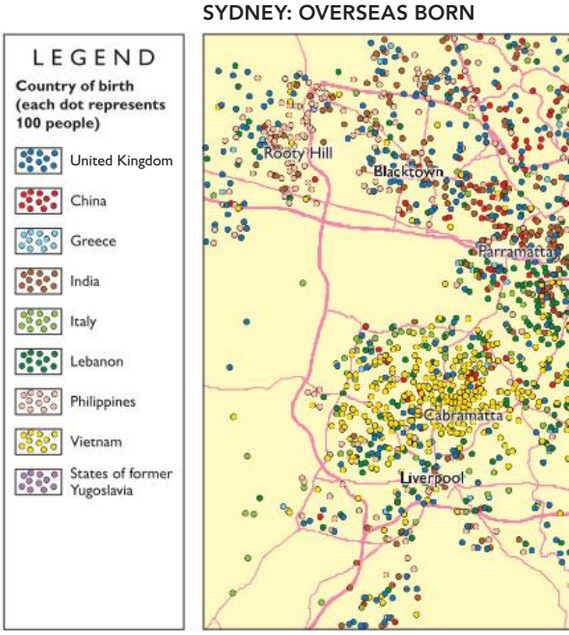

**AUSTRALIA: SETTLER ARRIVALS BY REGION**




**WORLD: AUSTRALIANS BORN OVERSEAS**




**SYDNEY: OVERSEAS BORN**

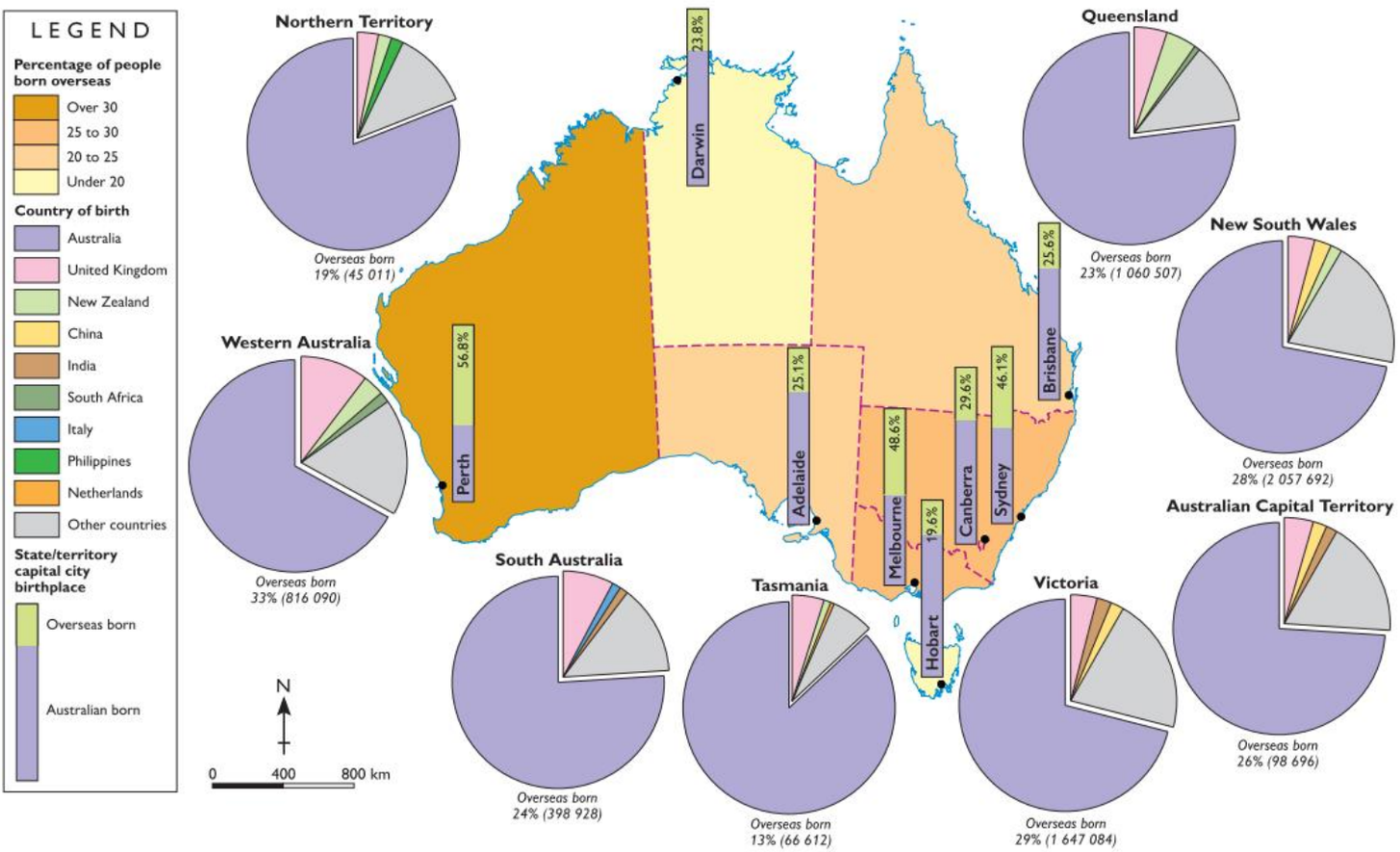


## Patterns of settlement

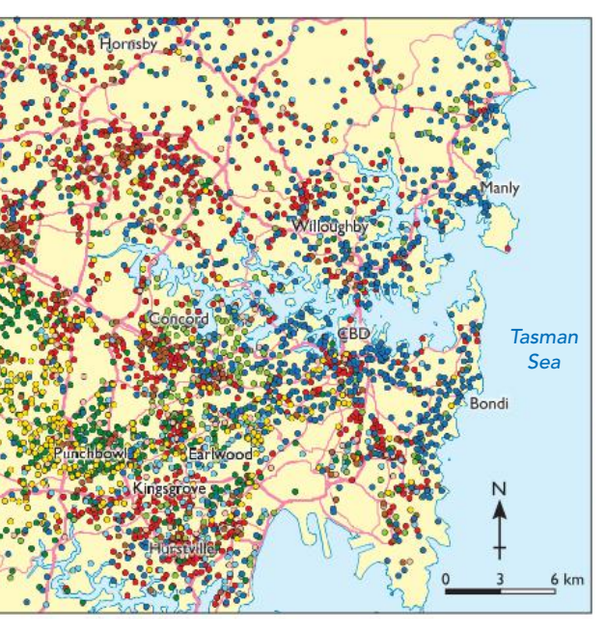
Migrants have settled throughout Australia. However, there is a large variation in their concentration between states and territories, as well as capital cities. In 2011, one-third of Western Australia's population was born overseas, the highest of any Australian state or territory. People born in the United Kingdom, New Zealand and South Africa were the largest groups of migrants. Victoria ranked second with 29 per cent of its population born overseas. Tasmania had the lowest concentration of people born overseas – just 13 per cent of its population.

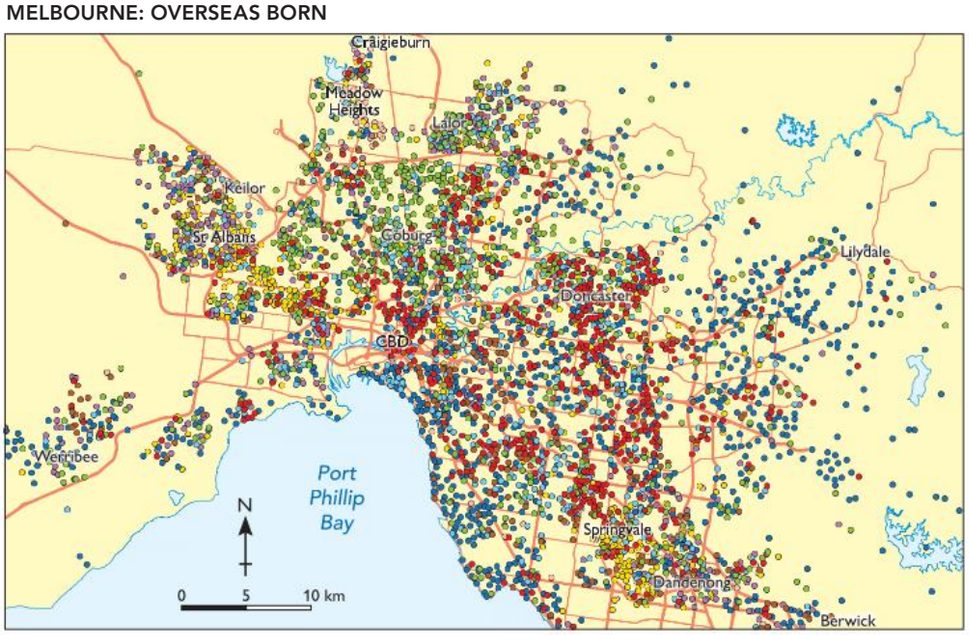
Within each state, many of Australia's migrants have settled in major cities, further contributing to the high level of urbanisation in the nation. In 2011, nearly 57 per cent of Perth's population was born overseas.

**AUSTRALIA: OVERSEAS BORN BY STATE/TERRITORY AND CAPITAL CITY**




**MELBOURNE: OVERSEAS BORN**



CASE STUDY

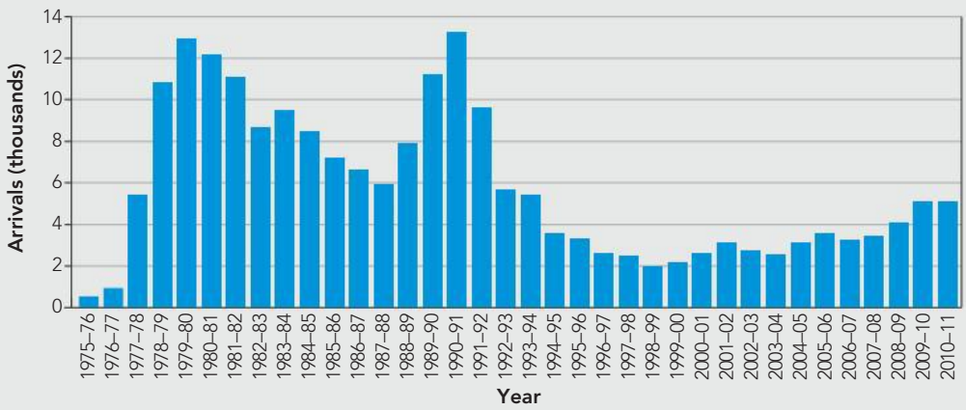
# International migrants: Vietnamese in Australia

The Vietnamese community is Australia's third largest migrant group from a non-English speaking country. Currently, there are over 200 000 Vietnamese-born living in Australia and over 45 000 children with one or both parents born in Vietnam.

Historically, Australia has had several waves of migrants from Vietnam. A large influx occurred after the Vietnam War (in the late 1970s through to the early 1980s) when most Vietnamese arrivals were refugees entering Australia on humanitarian grounds. In 1982, the Australian and Vietnamese governments arranged a family reunion program. Two-third of migrants over the next few years were women coming to join family members already in Australia. The relaxation of departure restrictions by Vietnam's government in the early 1990s created another increase in Vietnamese migrants to Australia.

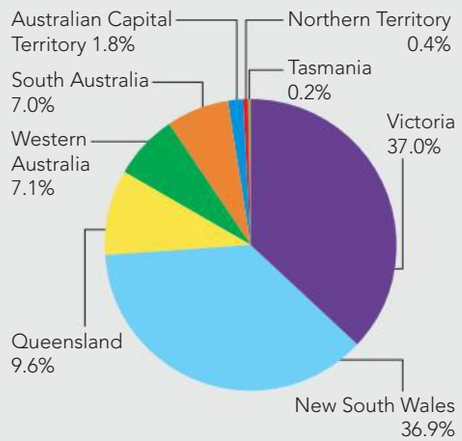
Between 2006 and 2011, Australia's Vietnamese population grew from 180 350 to 210 800 – an increase of around 25 per cent. In 2011, almost 75 per cent of all Vietnamese-born in Australia lived in New South Wales and Victoria.

**AUSTRALIA: VIETNAMESE ARRIVALS**




Anh Do, a Vietnamese-born Australian, ► came to Australia with his family as a refugee in 1980. Today Anh is one of Australia's best-known comedians, as well as being a successful author and actor.

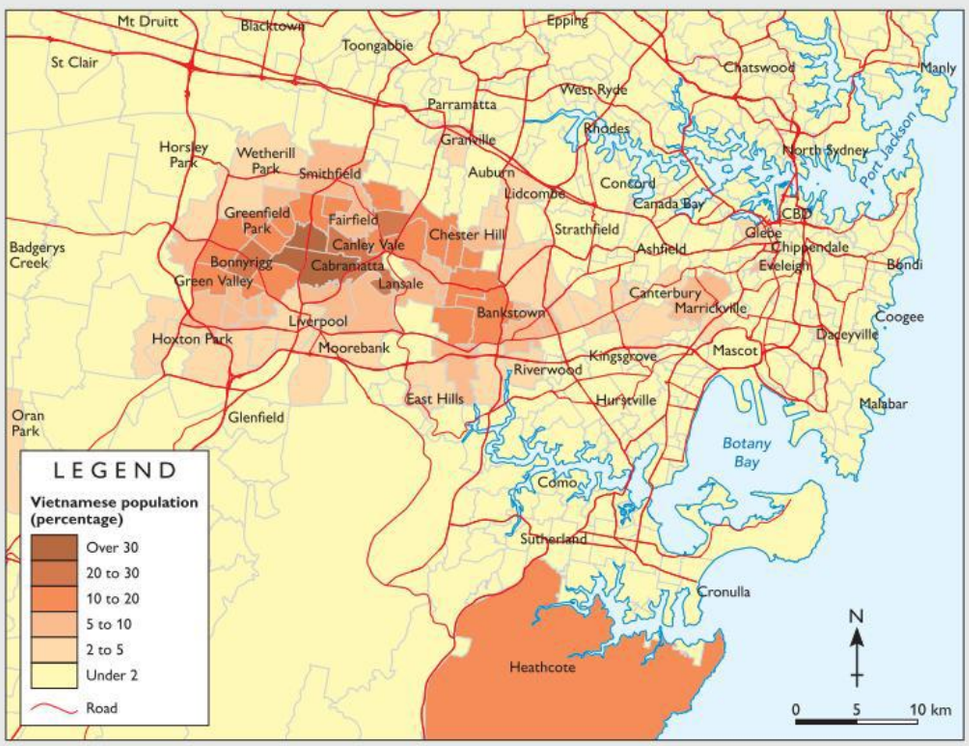
**AUSTRALIA: VIETNAMESE-BORN BY STATE/TERRITORY**




## Cabramatta – a Vietnamese community

The suburb of Cabramatta in south-western Sydney is Australia's largest Vietnamese community. Originally attracted to the area because of a large migrant hostel, many Vietnamese decided to settle permanently in the suburb. In 2011, nearly 33 per cent of Cabramatta's 20 780 residents were born in Vietnam. Australian-born residents accounted for 29 per cent of the population. Thirty-seven per cent of people spoke Vietnamese at home, while 11.5 per cent spoke English. The most common religion was Buddhism, practised by nearly 50 per cent of Cabramatta's residents.

**SYDNEY: VIETNAMESE POPULATION**



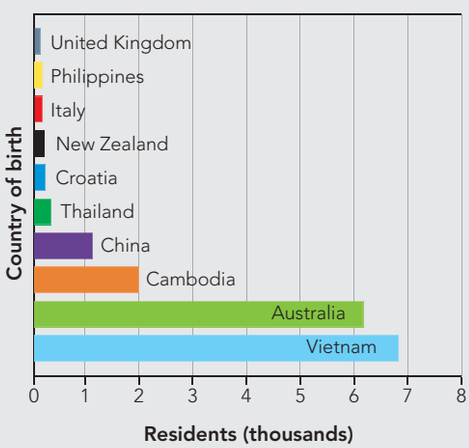
The streets of Cabramatta reflect the mix of South-East Asian cultures residing in the suburb, particularly Vietnamese. The main street, John Street, is dominated by the Pai Lau Chinese gateway. Shops spill out onto the footpaths like markets and there is a diverse mix of businesses. Places of worship are also an important feature of the Vietnamese community in Cabramatta. Small temples and shrines are common in the streets and the Mingyue Lay Buddhist Temple, one of the largest Buddhist temples in the southern hemisphere, is located in nearby Bonnyrigg.

▲ Cabramatta is home to a large number of restaurants and food stores specialising in a range of South-East Asian cuisines.

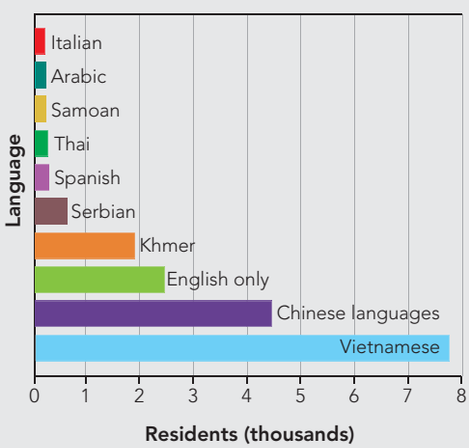
The shopping strip ► in John Street, Cabramatta

◄ This boy is attending Cabramatta's annual Moon Festival, which celebrates a centuries-old Chinese cultural event. In many Asian communities all over the world the festival is held to bring loved ones together for a feast of food and wine.

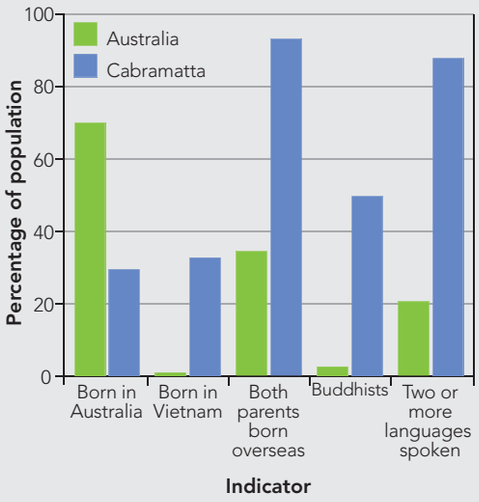

**CABRAMATTA: TOP 10 COUNTRIES OF BIRTH**




**CABRAMATTA: TOP 10 LANGUAGES SPOKEN AT HOME**

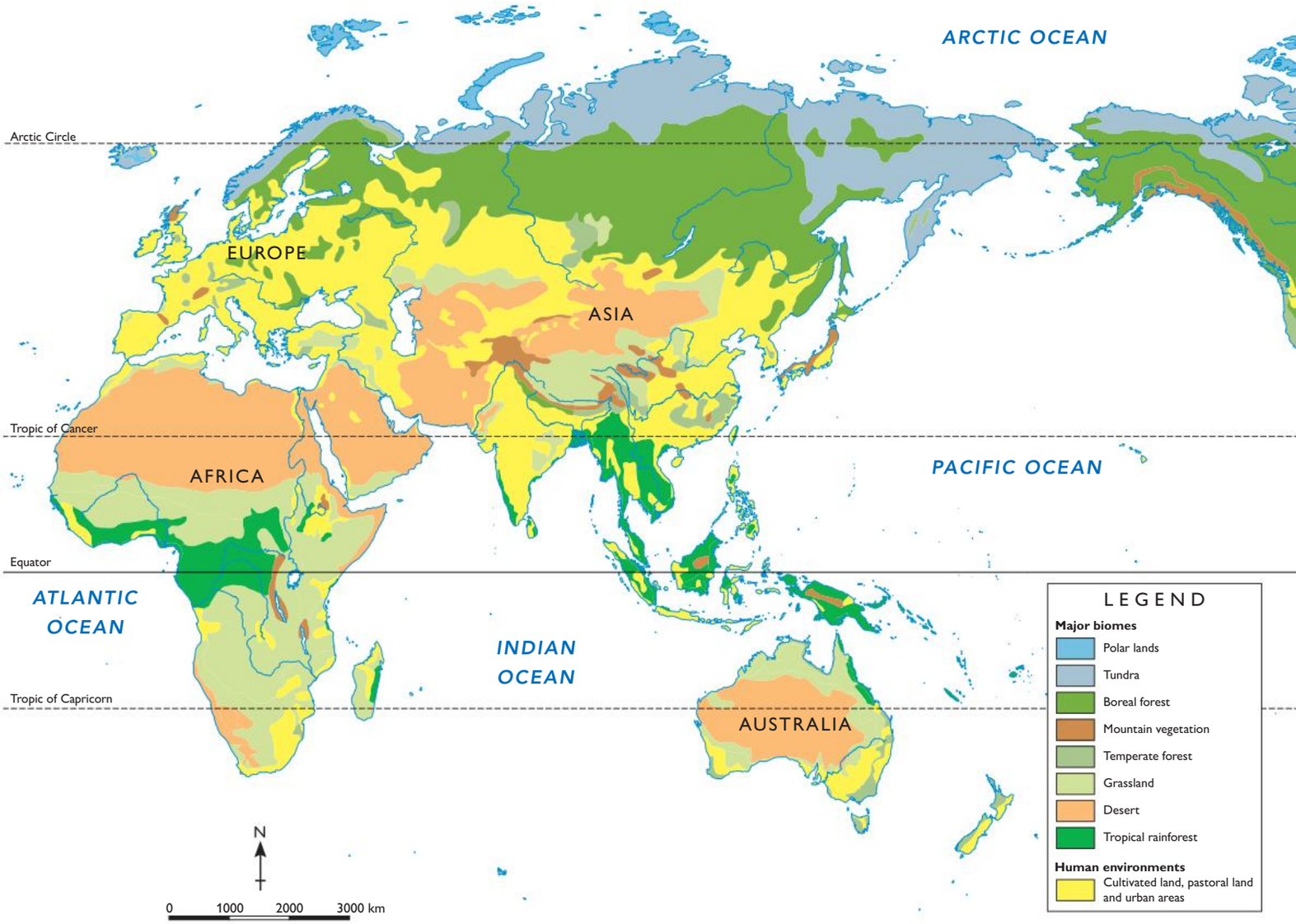



**AUSTRALIA AND CABRAMATTA: CULTURAL DIVERSITY COMPARISON**



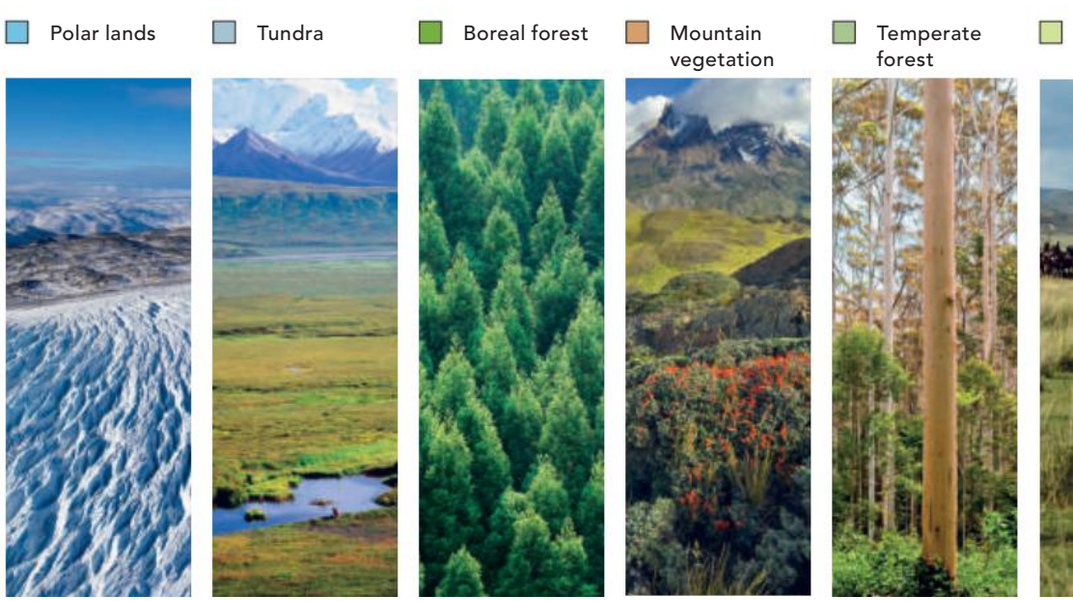
# Biomes

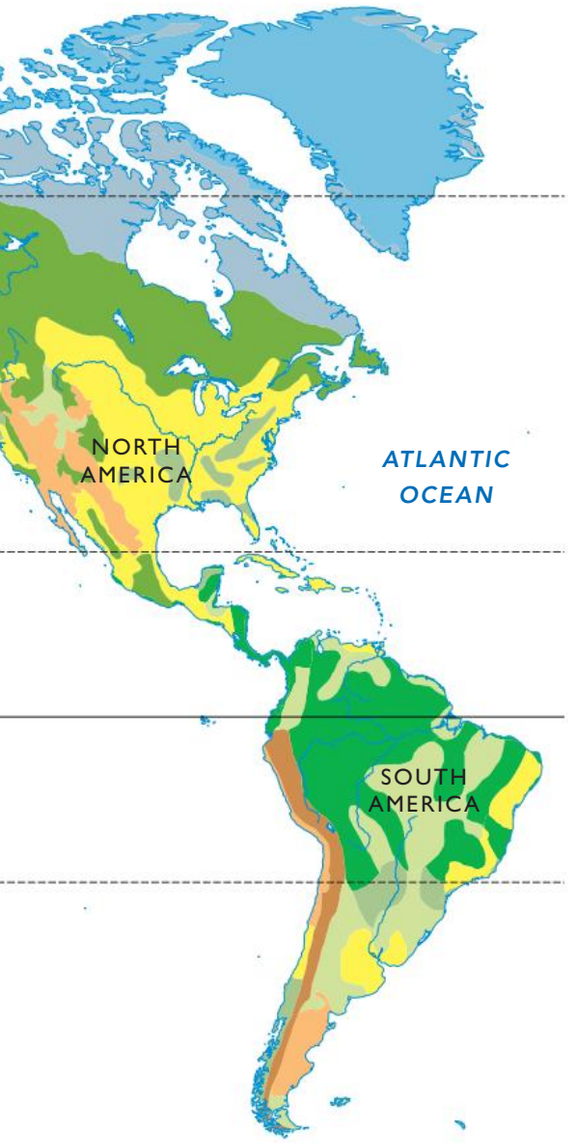
**WORLD: BIOMES**



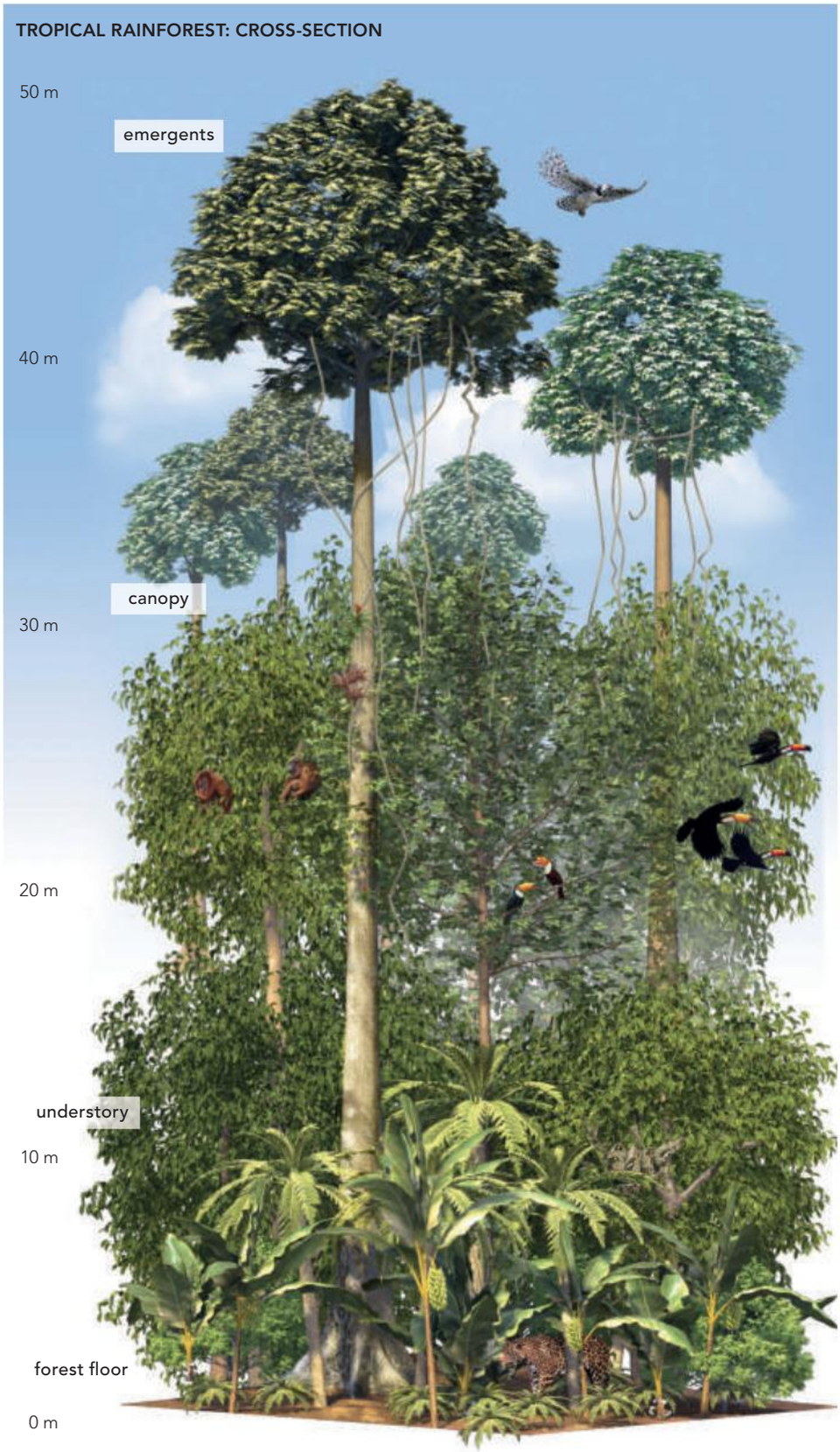

A biome is a region that shares similar and distinctive climates, soils and vegetation. The tropical rainforest biome, for example, is characterised by a warm and wet climate, highly weathered soils and thick, lush vegetation.

Many of the world's natural biomes have been greatly altered by human activities such as the production of food and fibre. Throughout the tropics, large areas of tropical rainforest have been cleared so the land can be used to grow crops like soybeans and palm oil, or for cattle farms. The alteration of biomes in this way often degrades the natural environment and leads to a loss of soil and water quality. It can also contribute to climate change.





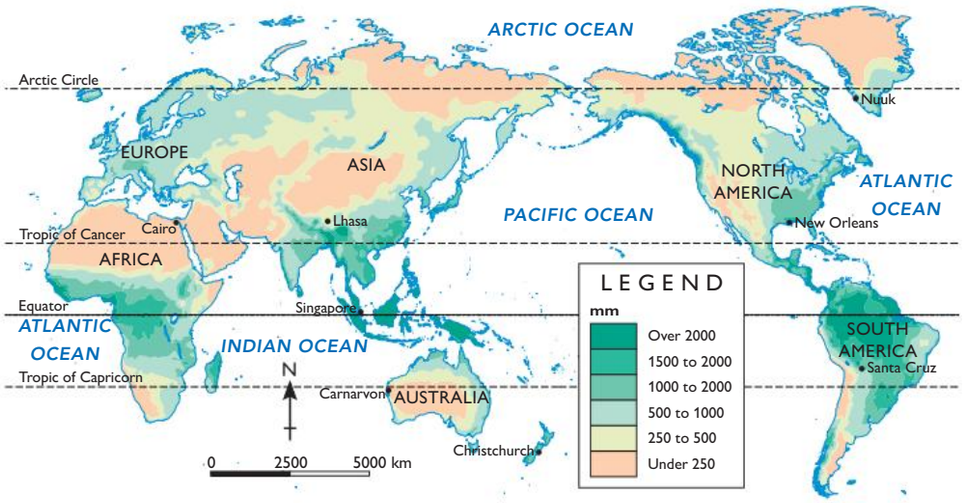

Grassland Desert Tropical rainforest



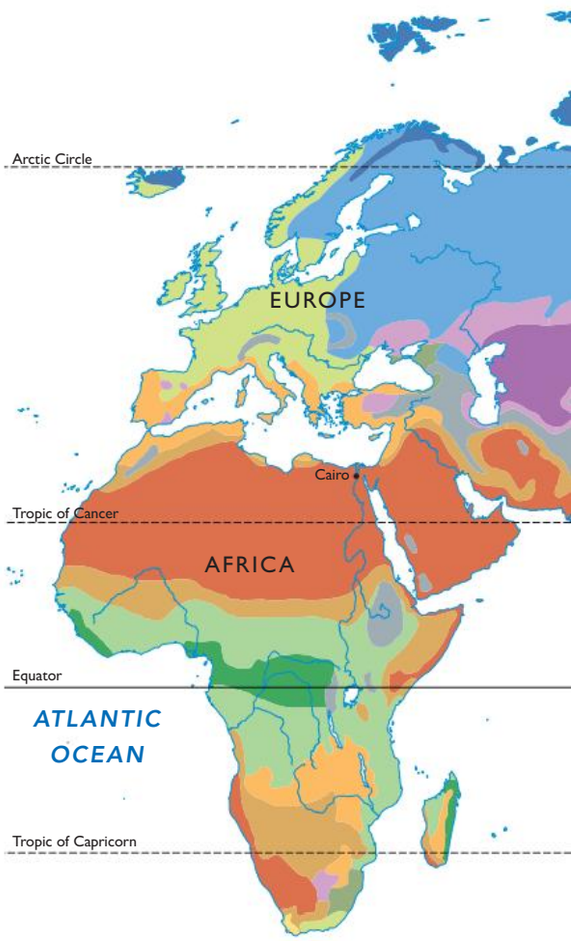

▲ Vegetation in tropical rainforests is organised in layers. The forest floor receives little sunlight and only plants adapted to low light grow here. It also contains decaying plant and animal matter. Just above the forest floor is the understory, where young trees and shrubs grow. Tall, straight trees form a dense canopy (or roof) over the rainforest and very tall trees known as emergents poke out above the canopy.

# Climate

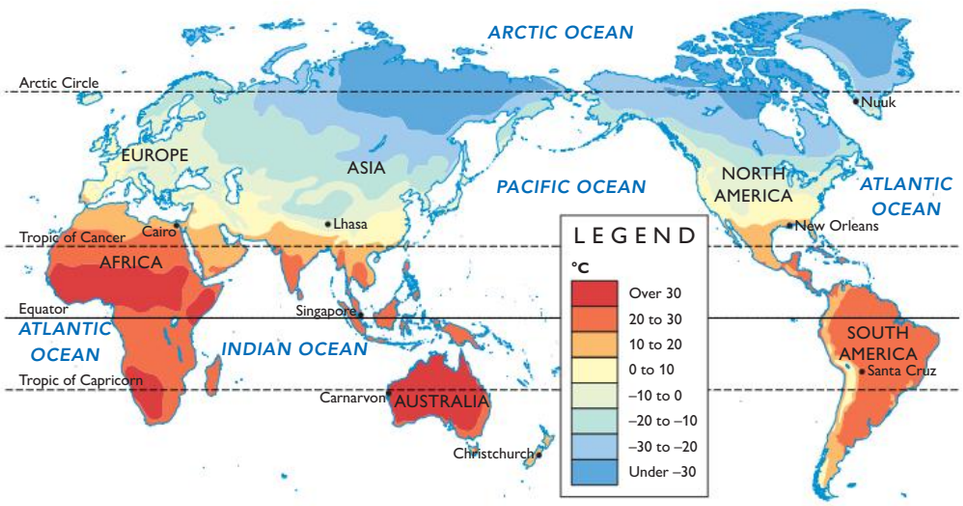
## WORLD: ANNUAL RAINFALL



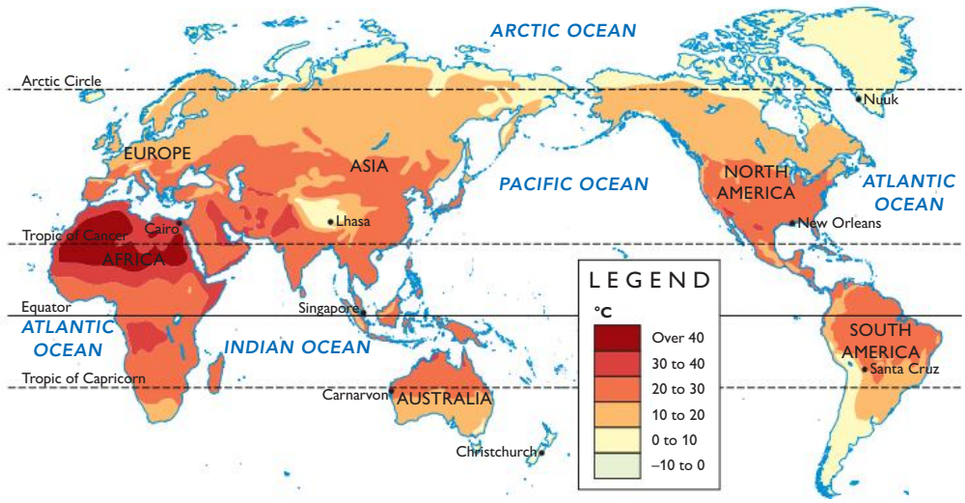

## WORLD: CLIMATE ZONES



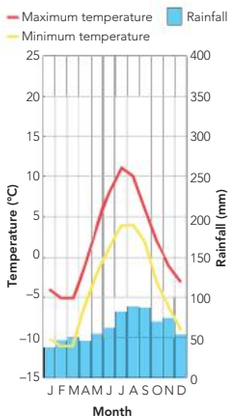

## WORLD: AVERAGE JANUARY TEMPERATURES



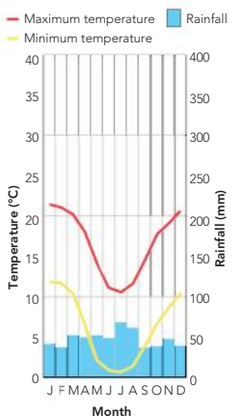

## WORLD: AVERAGE JULY TEMPERATURES

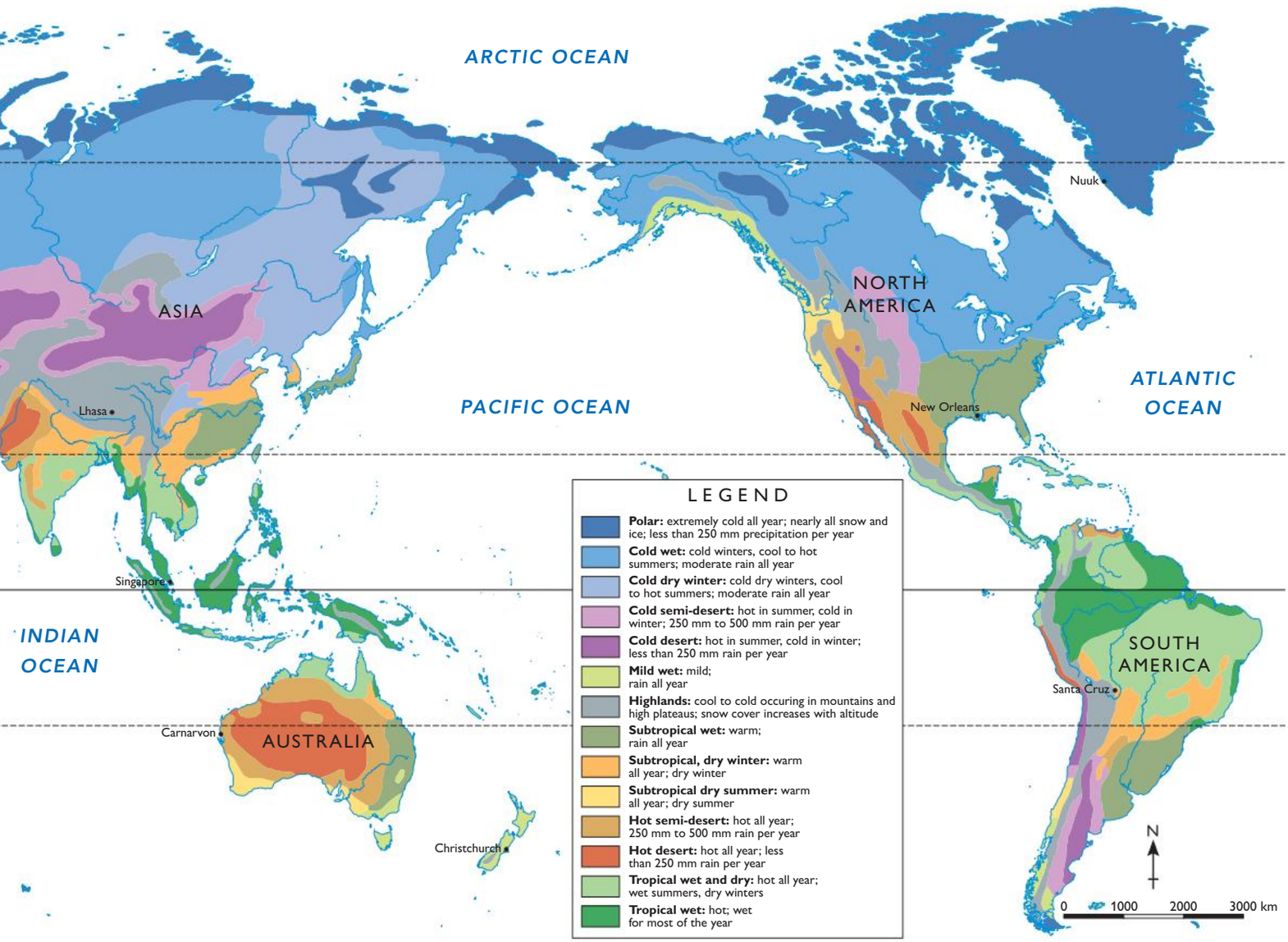



## NUUK, GREENLAND: CLIMATE GRAPH

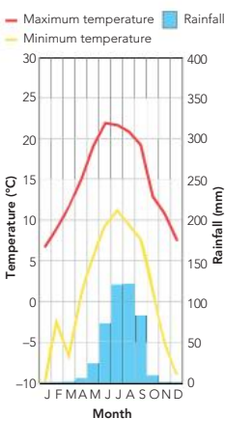



## CHRISTCHURCH, NEW ZEALAND: CLIMATE GRAPH

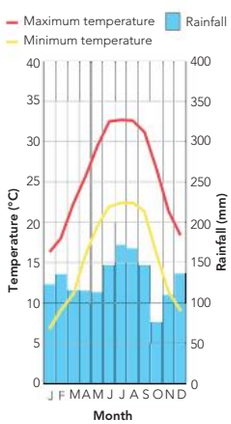




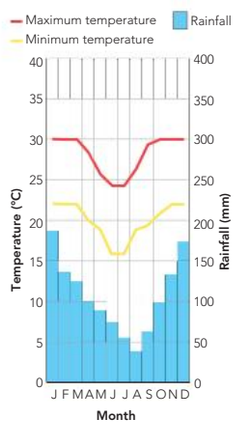

### LHASA, CHINA: CLIMATE GRAPH



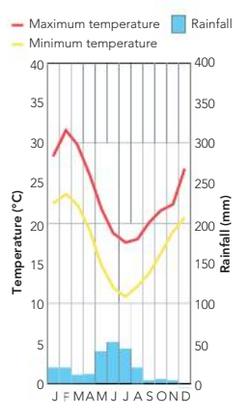

### NEW ORLEANS, USA: CLIMATE GRAPH



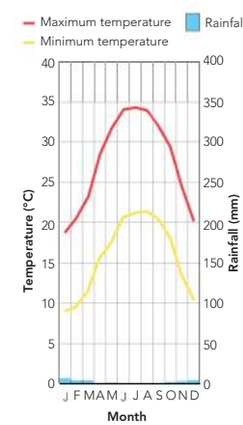

### SANTA CRUZ, BOLIVIA: CLIMATE GRAPH



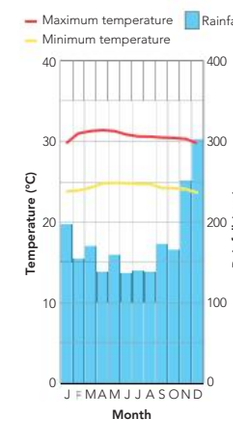

### CARNARVON, AUSTRALIA: CLIMATE GRAPH




### CAIRO, EGYPT: CLIMATE GRAPH




### SINGAPORE: CLIMATE GRAPH

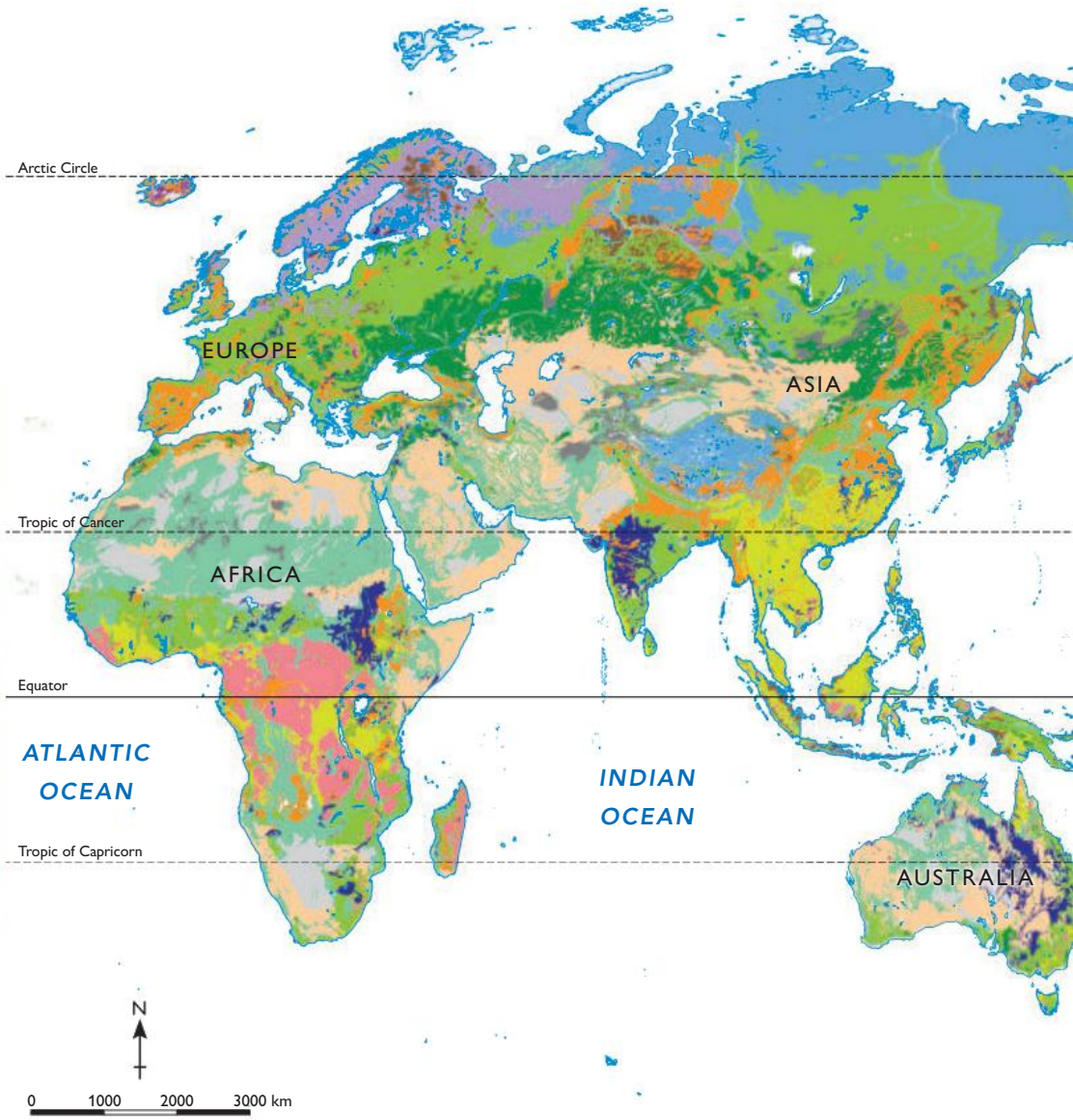


# Soils

Soil is used for many purposes, the most important being to produce the food we eat. The quality of soil varies greatly around the world and has a large influence on food production. Soils are classified into categories according to their colour, texture, structure and other properties. This helps us to determine the suitability of a soil for a particular use. With increasing world population and demands on food production, there will be more pressure placed on the world's most fertile soils and agriculturally productive land.

- Soil description
- → Soil location
- % Percentage of soils worldwide

**WORLD: SOILS**




## Alfisol

- Soils with clay subsoil, medium to high fertility
- → Semi-arid to humid regions
- % 10%

## Andisol

- Volcanic ash soils, young and very fertile
- → Near volcanoes
- % 1%

## Aridisol

- Dry soils, little organic matter
- → Desert regions
- % 12%

## Entisol

- Young soils lacking horizons
- → Steep slopes and floodplains
- % 18%

## Gelisol

- Soils with permafrost
- → Polar and mountainous regions
- % 9%

## Histosol

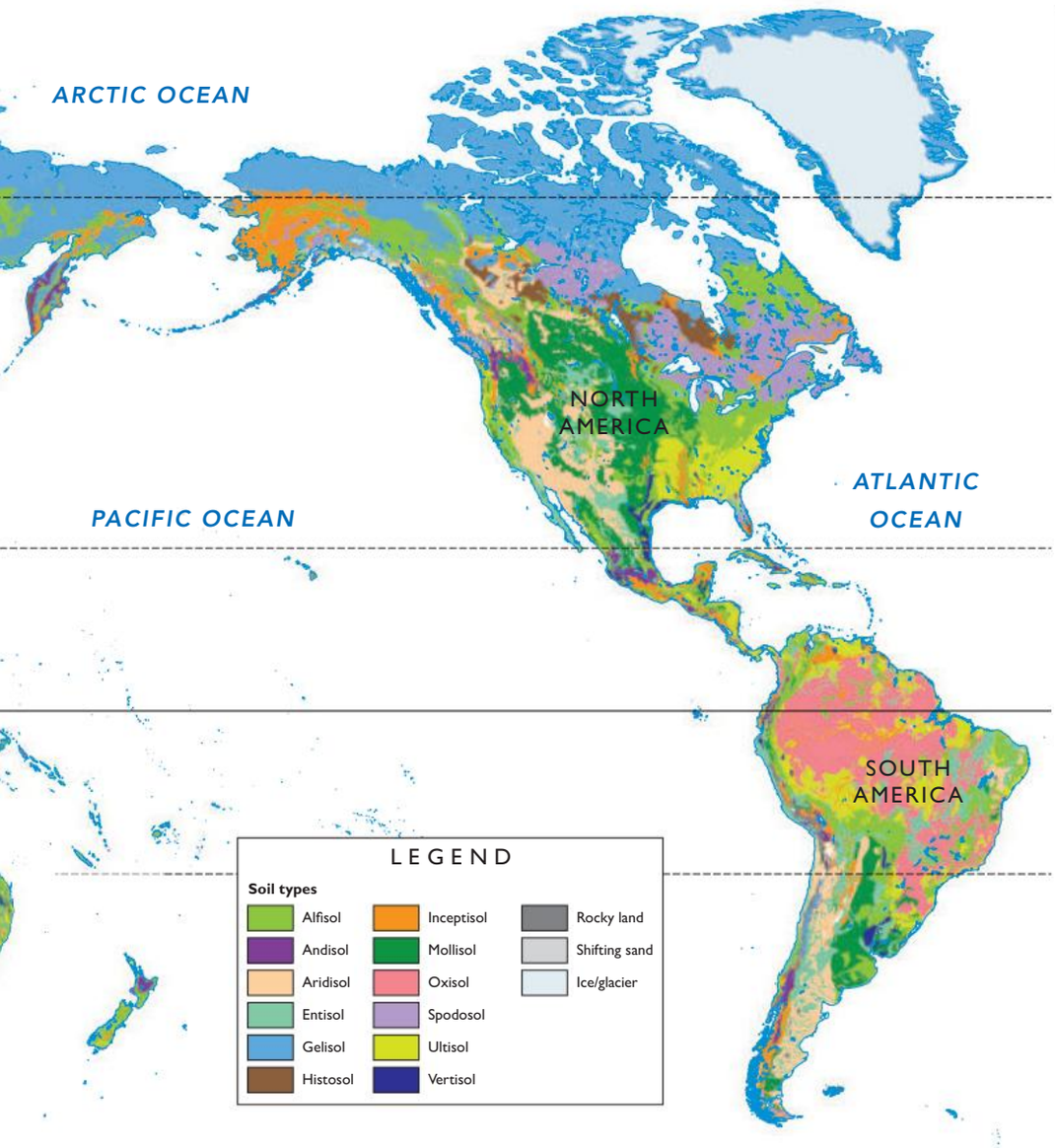
- Wet soils with high organic matter (peat)
- → Swamps and bogs
- % 1%

## Inceptisol

- Young, poorly developed soils
- → Widely distributed
- % 15%

## Mollisol

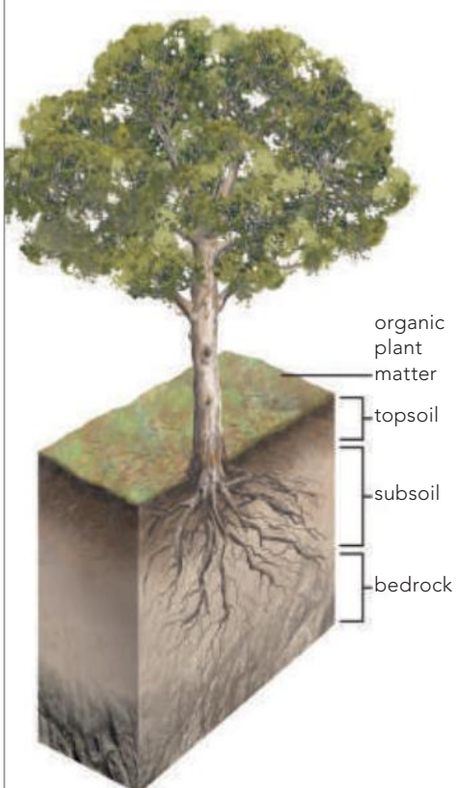
- Dark, fertile soils with high organic matter
- → Mid-latitude grasslands
- % 7%




FAST FACTS

## What is soil?

Soil is a thin layer of loose material that covers much of the world's land surface. It is mostly disintegrated rock formed by weathering and erosion, and rotting organic matter. Soil develops in layers called horizons. The uppermost horizon of soil, called topsoil, is darker as it contains the highest amount of humus (the decayed remains of plants and animals). Topsoil provides nutrients important for the growth of plants. In order for plants to take in these nutrients they must be dissolved into the groundwater and then absorbed through plant roots. The horizon under the topsoil is the subsoil, where the parent rock has been partially broken down by air, sunlight, water and wind. Underneath the subsoil is the bedrock, the unweathered parent rock of the soil above.




▲ A soil profile is a vertical cross-section through the soil.

### Oxisol

- Heavily weathered soils, low fertility
- → Tropical and subtropical regions
- % 8%

### Spodosol

- Acid soils, low fertility
- → Boreal forests in cool, moist climates
- % 4%

### Ultisol

- Red, acid soils with low fertility
- → Humid tropics and subtropics
- % 8%

### Vertisol

- Dark, clay-rich soils that shrink and swell with changes in moisture
- → Semi-arid tropics and subtropics
- % 2%

# Agriculture

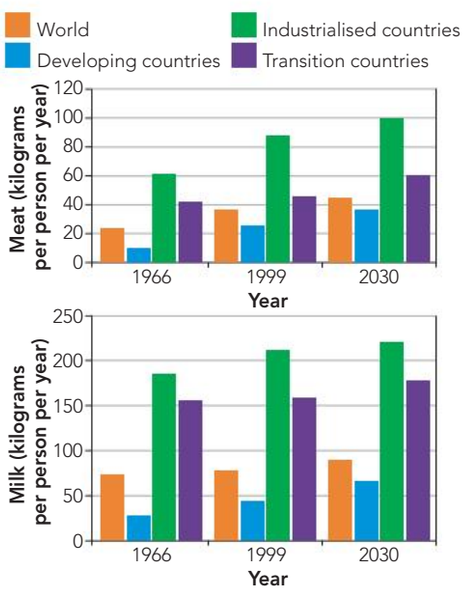
Agriculture includes all forms of plant cropping and animal farming, and provides the basis for feeding the people of the world. About 11 per cent of all land worldwide is used for crops and 25 per cent is used for pasture. Simple farm plots and small herds of animals provide enough food for communities. Extensive mechanised farms can produce enormous amounts of food to feed large populations, as well as for export overseas. Globally, there is a wide range of different farming techniques used to grow and harvest crops, and to rear animals for food and other products.

FAST FACTS

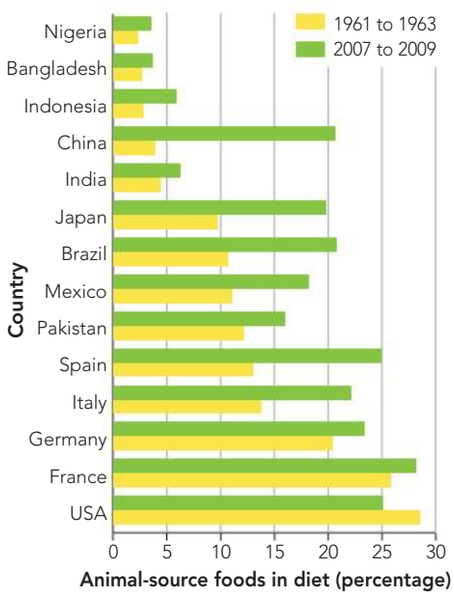
## Changing world diet

Diets are changing and expanding. The consumption of animal products is increasing in almost all regions of the world. However, people in low- and middle-income countries still consume far less meat and dairy than those in high-income countries.

### WORLD: CONSUMPTION OF ANIMAL-SOURCE FOODS

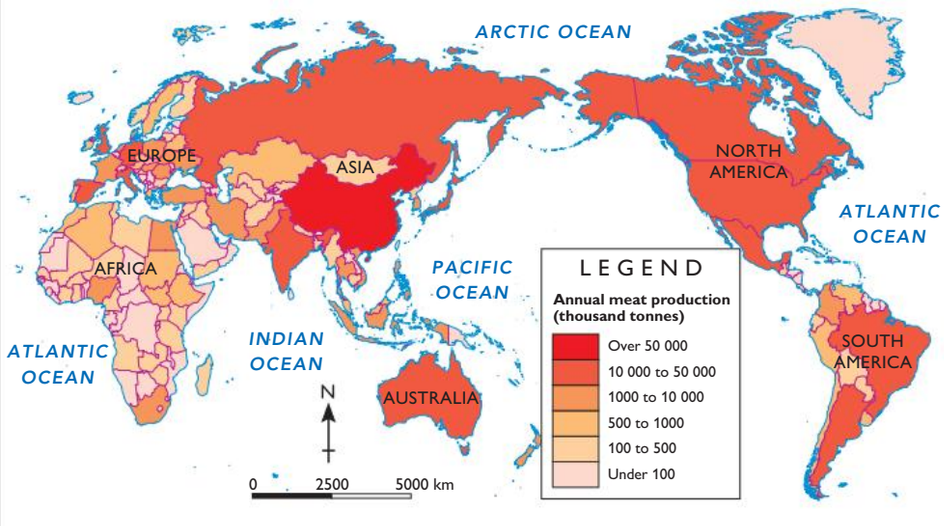



### SELECTED COUNTRIES: CONSUMPTION OF ANIMAL-SOURCE FOODS

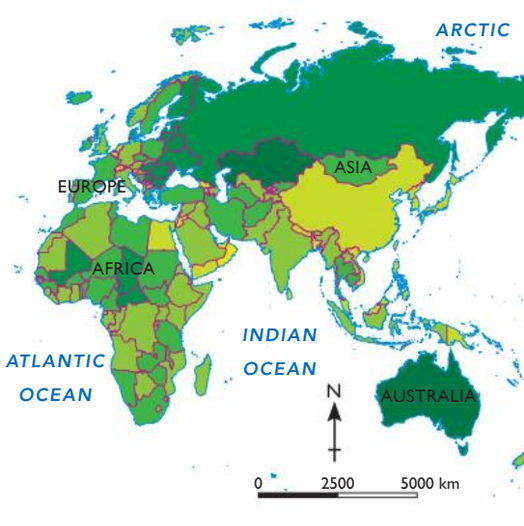


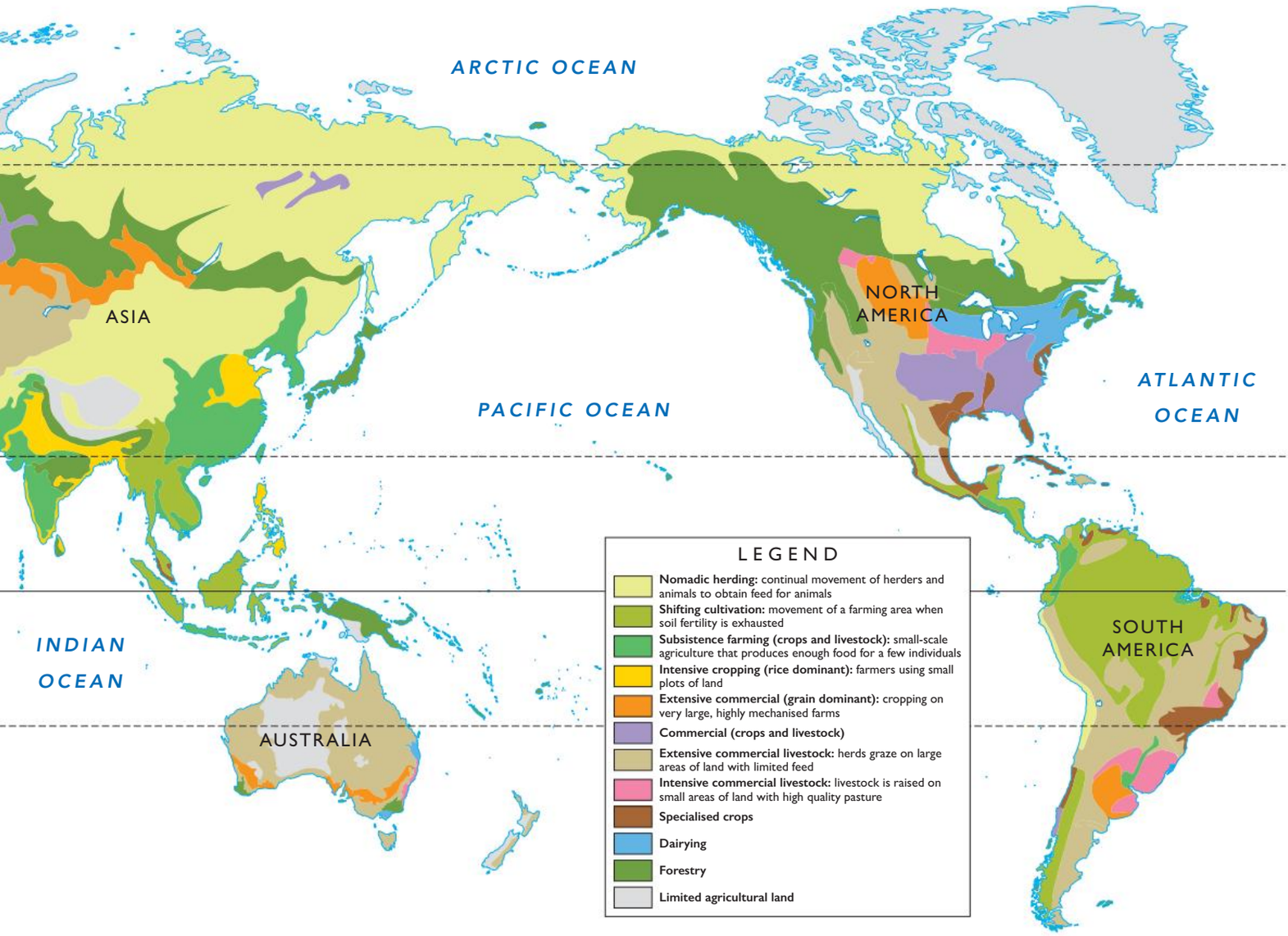

### WORLD: AGRICULTURAL REGIONS


### WORLD: MEAT PRODUCTION

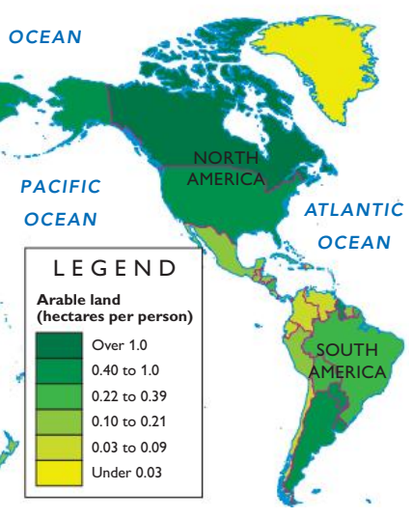


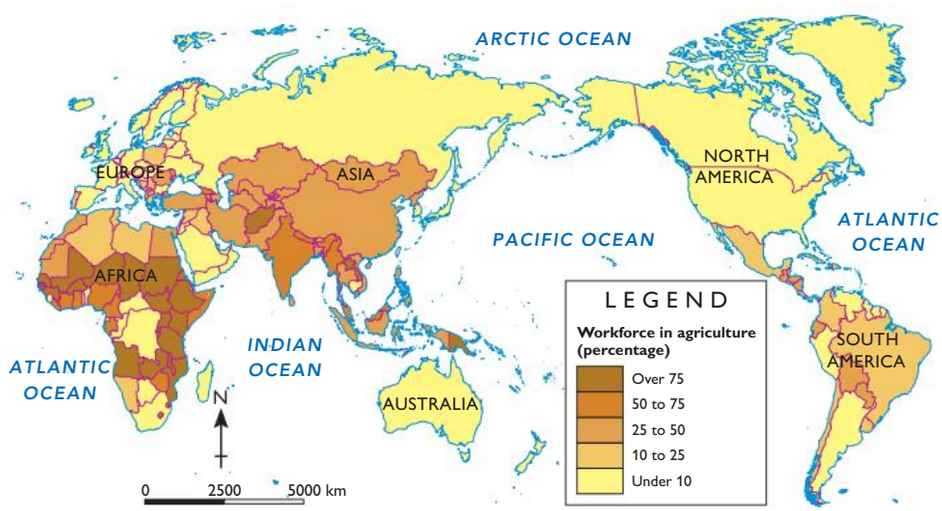

### WORLD: ARABLE LAND






**WORLD: WORKFORCE EMPLOYED IN AGRICULTURE**



CASE STUDY

# Rice terraces: Food production in Bali

Humans alter the natural environment in many ways to produce food and fibre. One of the most spectacular examples of this is the creation of rice terraces on the Indonesian island of Bali. The people of Bali have relied on rice for centuries – it is their main source of food and holds an important role in the island's religious ceremonies. Oxen and water buffalo are used to plough the flooded fields. Young rice plants are then transplanted into the flooded paddies and as the plants mature the water level is dropped. By harvest time the ground is entirely dry.

▲ Oxen plough a flooded paddy.

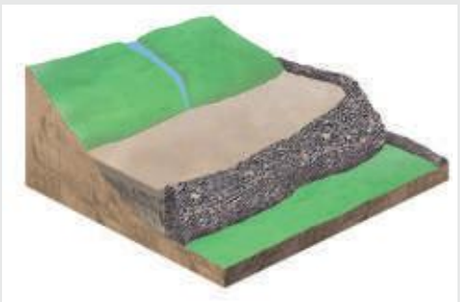
**BALI**


▲ The fertile, volcanic soils of Bali are terraced and flat fields are created from sloping land. The Balinese irrigation system that controls water in the rice paddies is one of the oldest continuously used irrigation systems in the world.

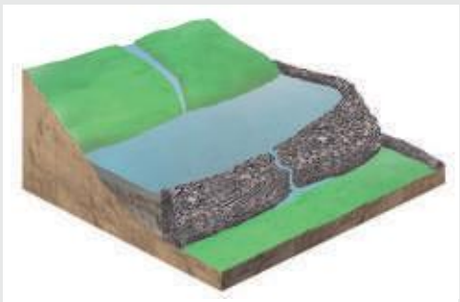
**BUILDING A TERRACED RICE PADDY**

▲ A stone wall is constructed. Soil and rock fill in the area behind the retaining wall.

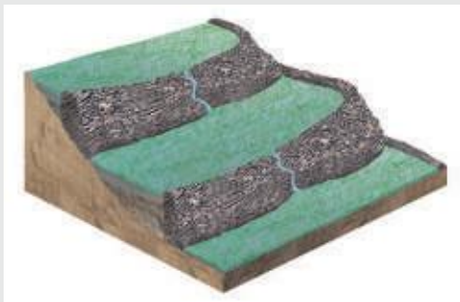
▲ A small Balinese village sits in a patch of original vegetation amidst a sea of terraced rice paddies.



▲ The retaining wall is built higher and back-filled. The earth is flattened to produce a smooth horizontal surface.



▲ The terrace is flooded. The water depth is controlled by an outlet, which also feeds into the lower terrace.



▲ Further terraces may be built, each connected to one another through a common water supply.

# Agriculture in Australia

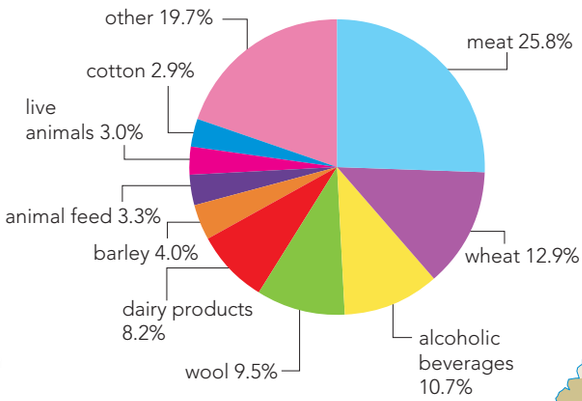
Much of Australia is used to grow crops and to raise animals for human consumption. The type of farming undertaken is mainly determined by climate and the availability of water. In arid areas where vegetation is sparse, extensive grazing takes place, with an average of one beast per 100 hectares. In high rainfall areas where pastures are good there is an average of one beast to every four hectares of land. This is known as intensive grazing.

## How is food production in Australia changing?

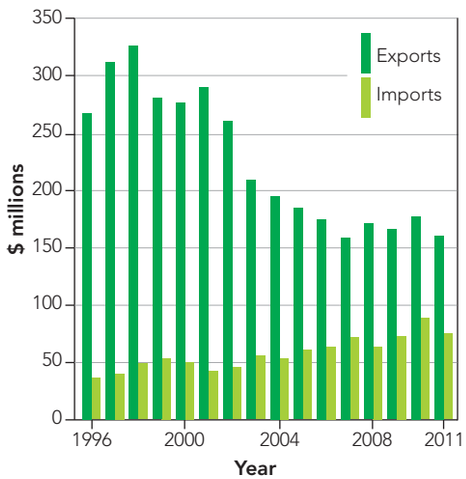
Australia is largely a food secure nation – around 93 per cent of the food (by value) consumed in Australia is produced locally. However, food production faces great challenges due to population growth, climate change, reduced water supplies, soil degradation, and labour costs and shortages.

Our expanding cities are sprawling into productive farmland on the rural–urban fringe. Sydney's vegetable farms now occupy less than half the 5000 hectares they covered a decade ago. These challenges occur not only in Australia but also in many places around the world.

**AUSTRALIA: AGRICULTURAL EXPORTS**




**AUSTRALIA: VALUE OF FRESH VEGETABLE EXPORTS AND IMPORTS**




▲ A farmer near Melbourne tends to his broccoli crop. Vegetable farms on the rural–urban fringe are under pressure from expanding cities.


Rural industries and governments in Australia are working to raise farm productivity. Through the use of new technologies and better production and management methods, fertility of the land, water supplies and biodiversity can be improved.

▲ Research has shown that wheat yields increase when rotation crops such as canola are planted. Canola gives the soil a nitrogen boost and provides an income for farmers.

▲ The area cropped in Australia has more than doubled over the last 40 years. Half of the cropland is sown with wheat.

## AUSTRALIA: AGRICULTURAL REGIONS


▲ Bananas need warm temperatures and high rainfall to grow. Australia's banana-growing area is located along the country's north-eastern coast.

▲ Fruit and vegetable farms are often located near major cities to ensure a fresh supply.

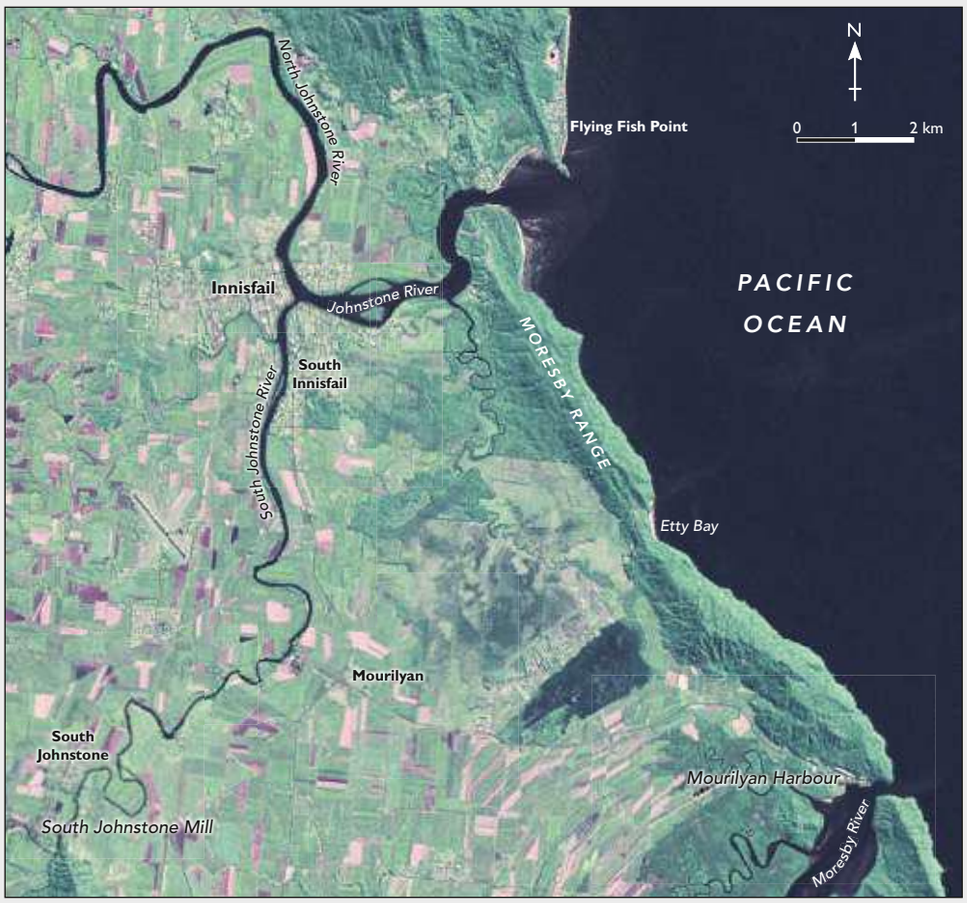
CASE STUDY

# Innisfail: Sugarcane farming in Queensland

Around 95 per cent of sugar produced in Australia is grown in Queensland along a high-rainfall coastal strip from Mossman in the north to Beenleigh in the south. More than 80 per cent of all sugar produced is exported as raw sugar, earning around $1.5 billion per year. Queensland's major overseas markets include Canada, China, Japan, South Korea, Malaysia, New Zealand, Singapore, the United States and Russia. The state's raw sugar industry has grown into one of the world's most efficient and highly organised sugar industries. There are seven bulk storage terminals located along the coast that can store up to two million tonnes of raw sugar, facilitating delivery to refineries in Australia and overseas throughout the year.

Innisfail (AR8061) in far north Queensland is one of the many towns along the coast that supports the sugar industry. The South Johnstone Sugar Mill (GR785566) is located just south of Innisfail, in close proximity to the sugarcane farms in the area. Once harvested, the cane is transported to the mill by rail. The raw sugar produced at the mill is then exported through the bulk storage terminal at Mourilyan Harbour (GR853570).

**QUEENSLAND: SUGARCANE GROWING AREA AND FACILITIES**

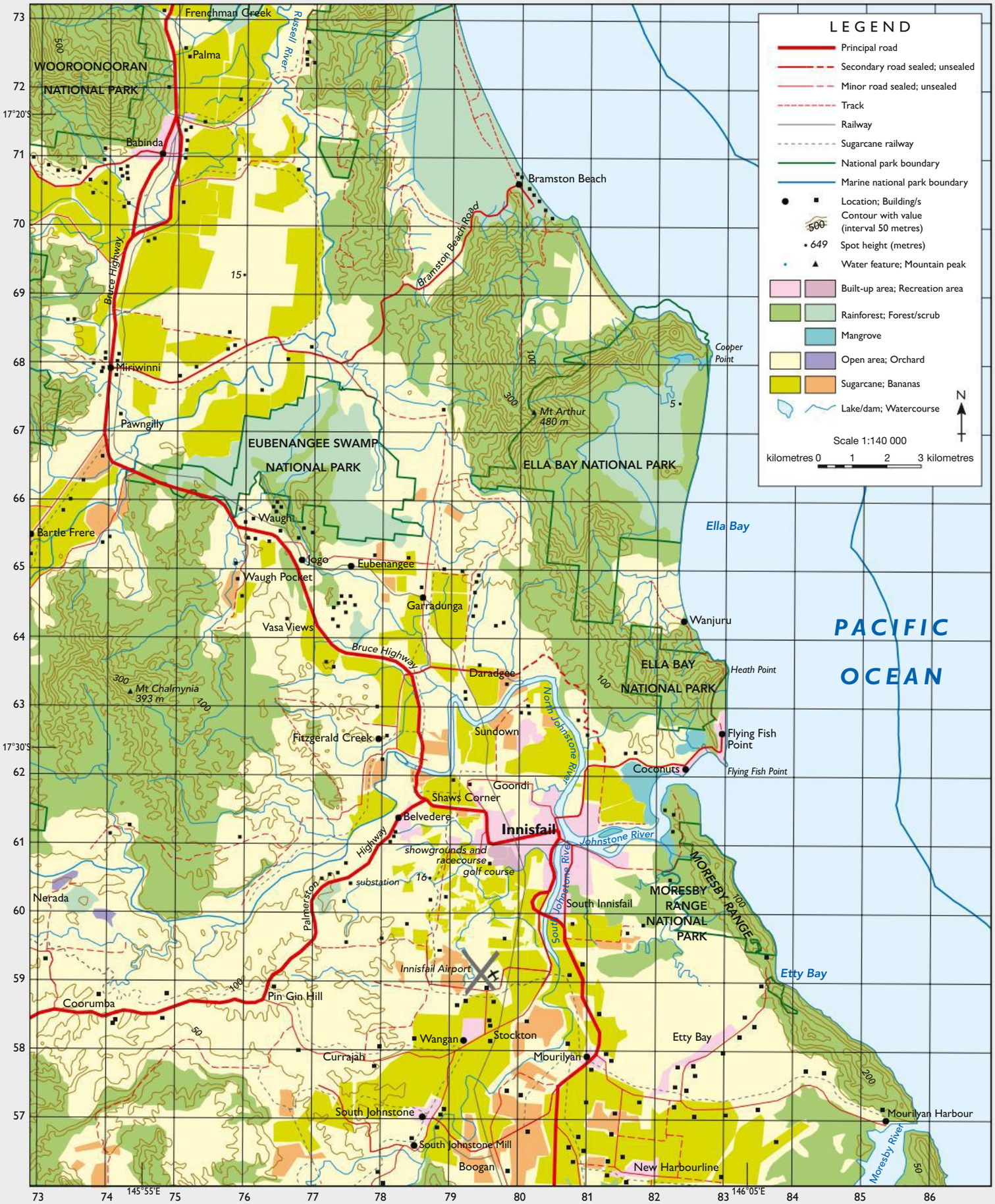




▲ Innisfail is an agricultural centre surrounded by farmland. On this satellite image, urban areas appear as white to grey, vegetation as shades of green and pink, and water as dark blue to black.

▲ Cane harvesting in Queensland is highly mechanised.

▲ Harvested sugarcane in bins ready to be transported to the sugar mill.

## INNISFAIL AND SURROUNDING AREA: TOPOGRAPHIC MAP



# Land degradation and food production

All around the world the natural biomes of forests, grasslands, tundra and even deserts are being converted into farms. Agriculture changes the natural landscape in many ways. Natural vegetation is cleared and replaced with single plant species – crops and pastures for grazing. Soil can be damaged by overfarming and other poor agricultural practices, impacting on its ability to support plants and animals. Water diverted from rivers and aquifers to grow crops and raise animals may become polluted through the use of fertilisers and pesticides. All of these changes can cause degradation of the natural environment. Soil erosion, desertification and salinity are three common forms of land degradation brought about by farming.

▲ Soil degradation caused by poor farming practices has turned this once productive farm in Kenya into unusable land.

**WORLD: DEFORESTATION**

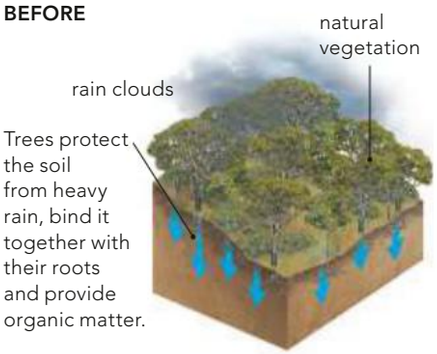

FAST FACTS

## Soil erosion, desertification and salinity

### Soil erosion

Soil erosion is the removal of topsoil faster than the soil-forming processes can replace it. Natural vegetation protects the soil. When land is cleared for farming it loses topsoil easily, often resulting in a lowering of soil nutrients and productivity. Each year, five to seven million hectares of farmland are lost to soil erosion worldwide.

**BEFORE**

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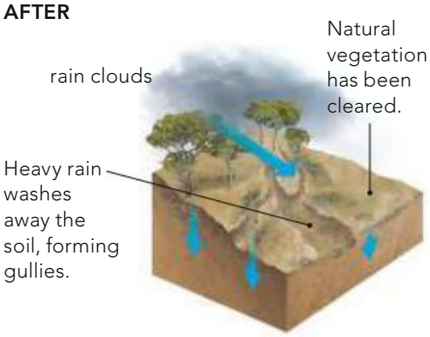
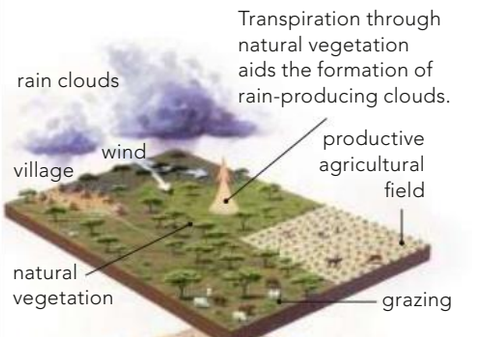



### Desertification

Desertification is the transformation of fertile land into dry, desert-like areas. Human activities such as deforestation, overgrazing and poorly managed agriculture can cause desertification. Unprotected, dry soil surfaces blow away with the wind or are washed away by rain, leaving infertile lower soil layers that are unproductive.

**BEFORE**

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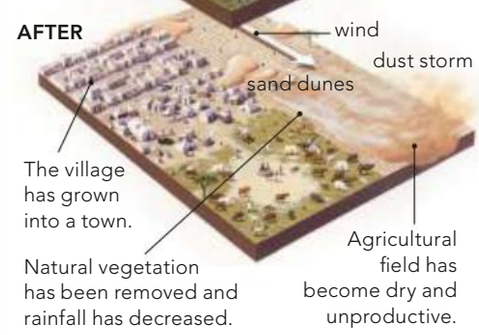
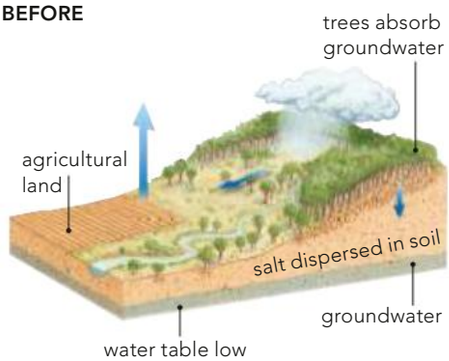



### Salinity

Salinity refers to a high level of salt in the soil, which kills plants. Salt in the underground water is forced to rise when we remove trees with deep root systems that keep the water table low in the ground. This is known as dryland salinity. When extra water from irrigation enters the ground it also forces the water table to rise. This is known as irrigated salinity.

**BEFORE**

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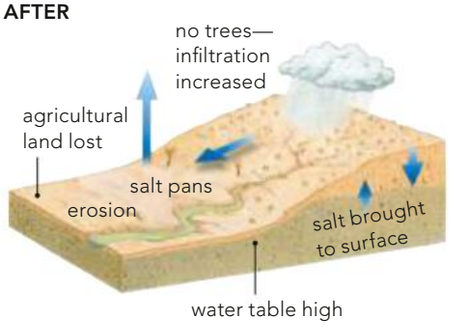
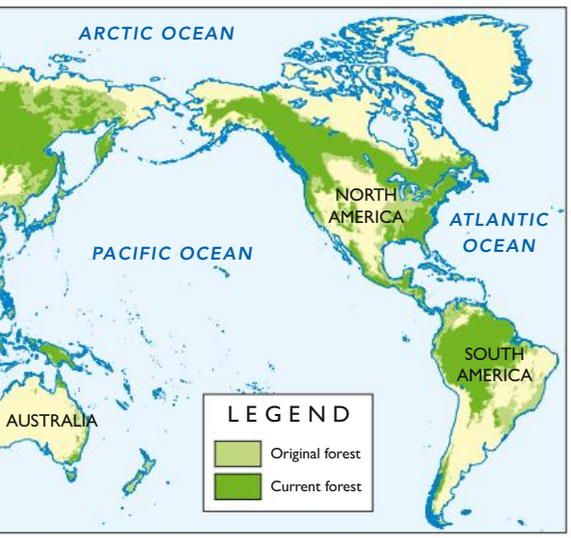
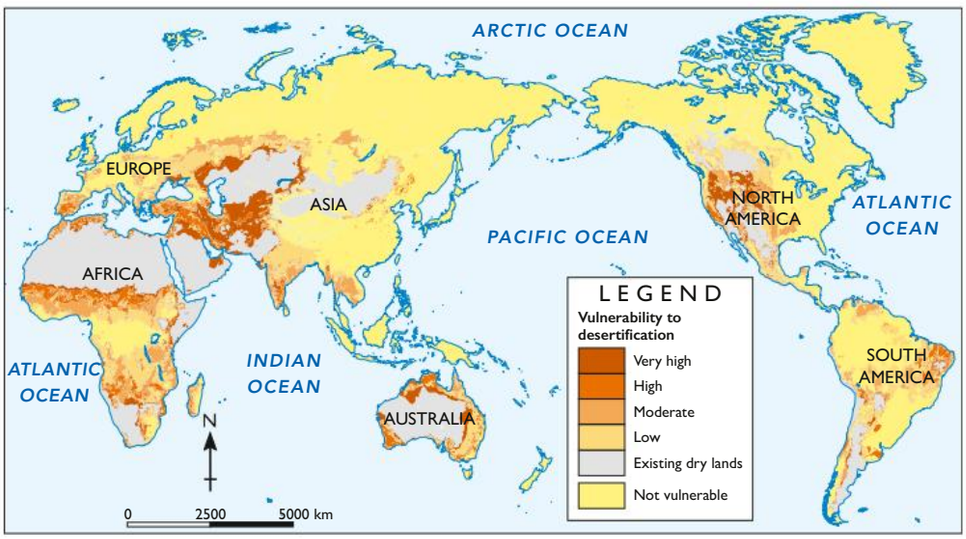
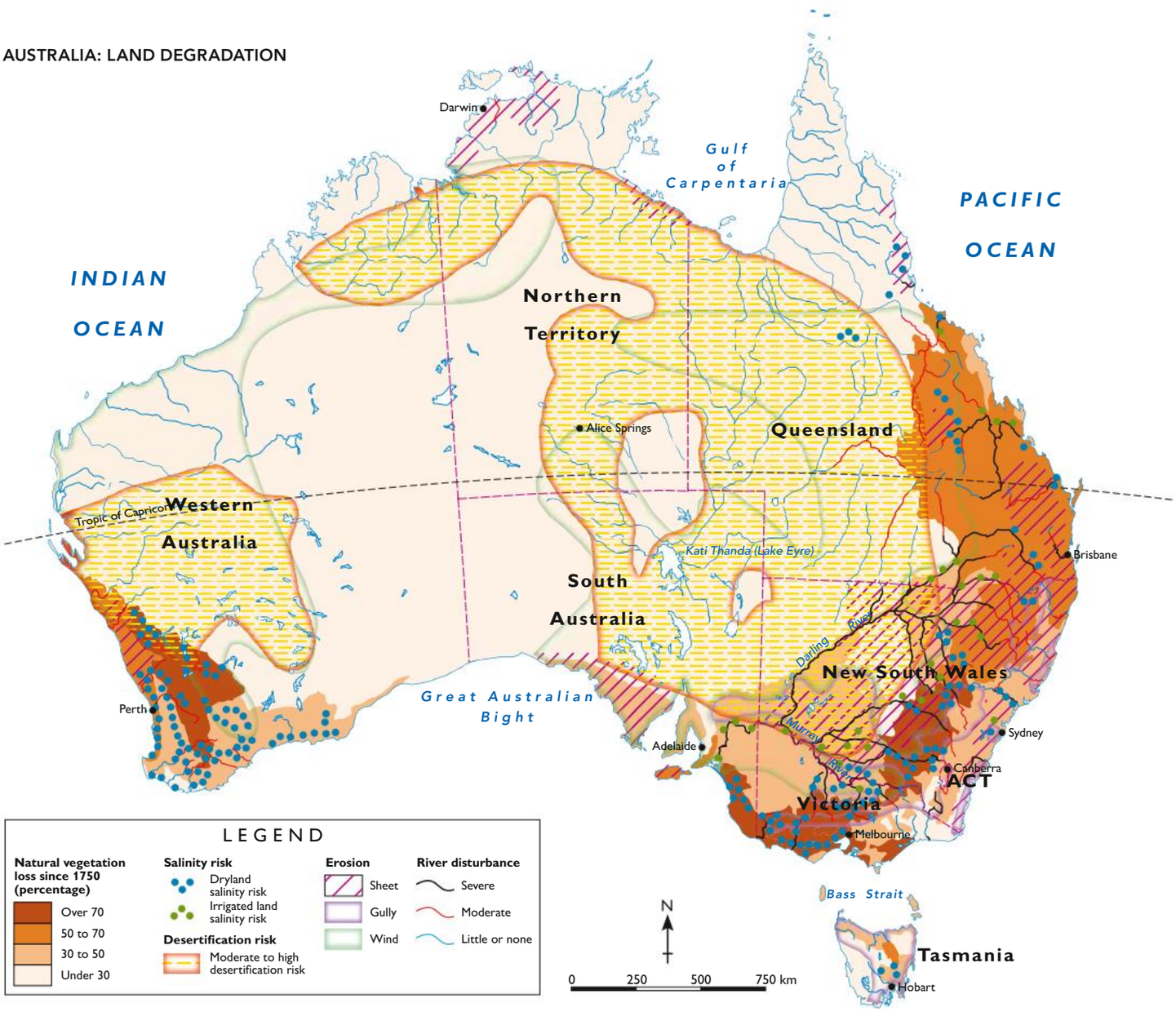





WORLD: DESERTIFICATION




AUSTRALIA: LAND DEGRADATION



CASE STUDY

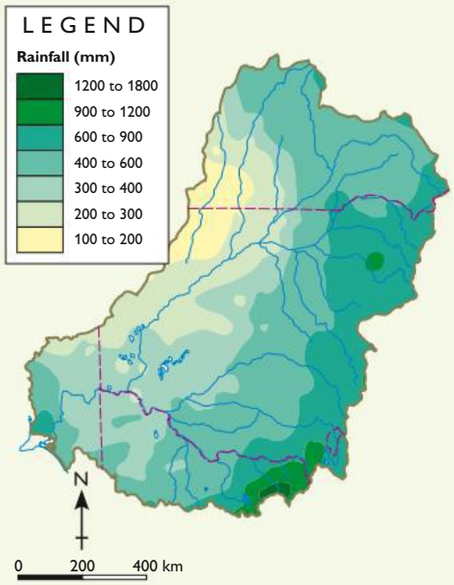
# Murray–Darling Basin: Australia's food bowl

The Murray–Darling Basin covers 14 per cent of Australia and stretches across four states. The region generates one-third of Australia's food and 40 per cent of Australia's total gross agricultural income. It produces 53 per cent of cereals grown for grain (100 per cent of rice), 95 per cent of oranges and 54 per cent of apples. The Basin supports 28 per cent of Australia's cattle herd, 45 per cent of sheep and 62 per cent of pigs.

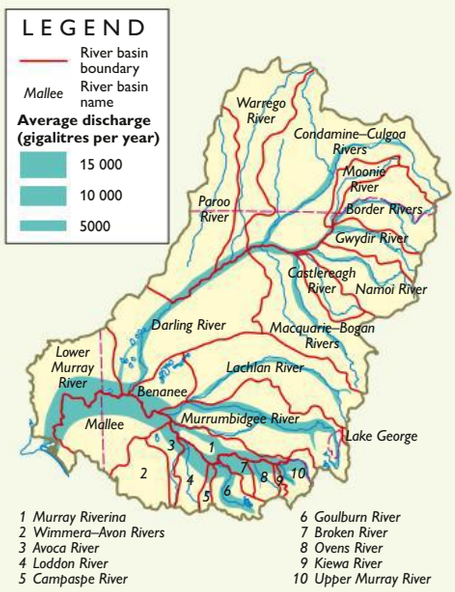
Growing crops and pasture through irrigation is more common in the Murray–Darling Basin than elsewhere in Australia. The Basin accounts for 66 per cent of Australia's agricultural water consumption.

## MURRAY–DARLING BASIN: WATER STORAGES

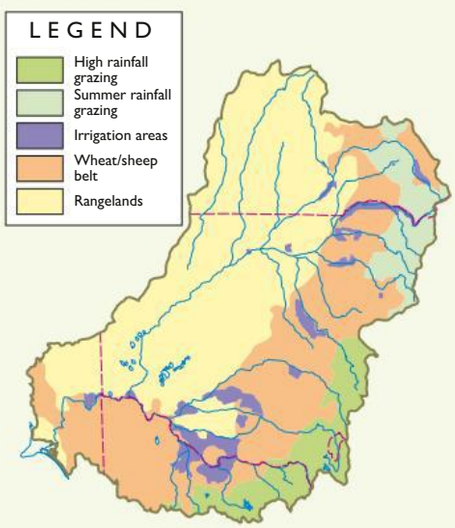

## MURRAY–DARLING BASIN: RAINFALL



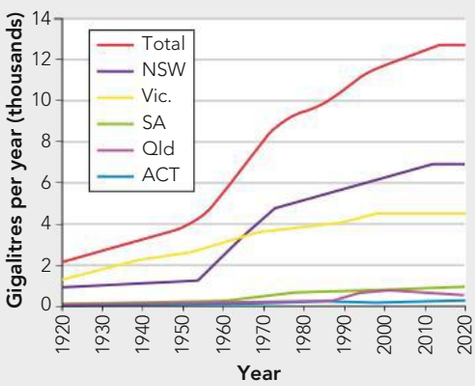

## MURRAY–DARLING BASIN: WATER DISCHARGE



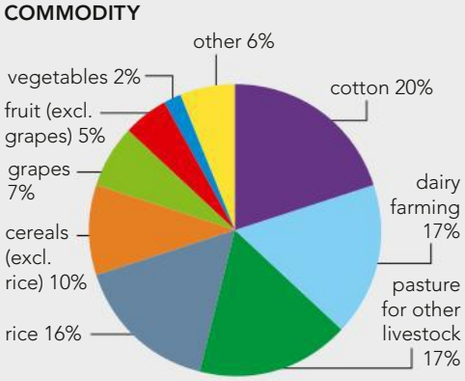

## MURRAY–DARLING BASIN: LAND USE




## MURRAY–DARLING BASIN: WATER USE



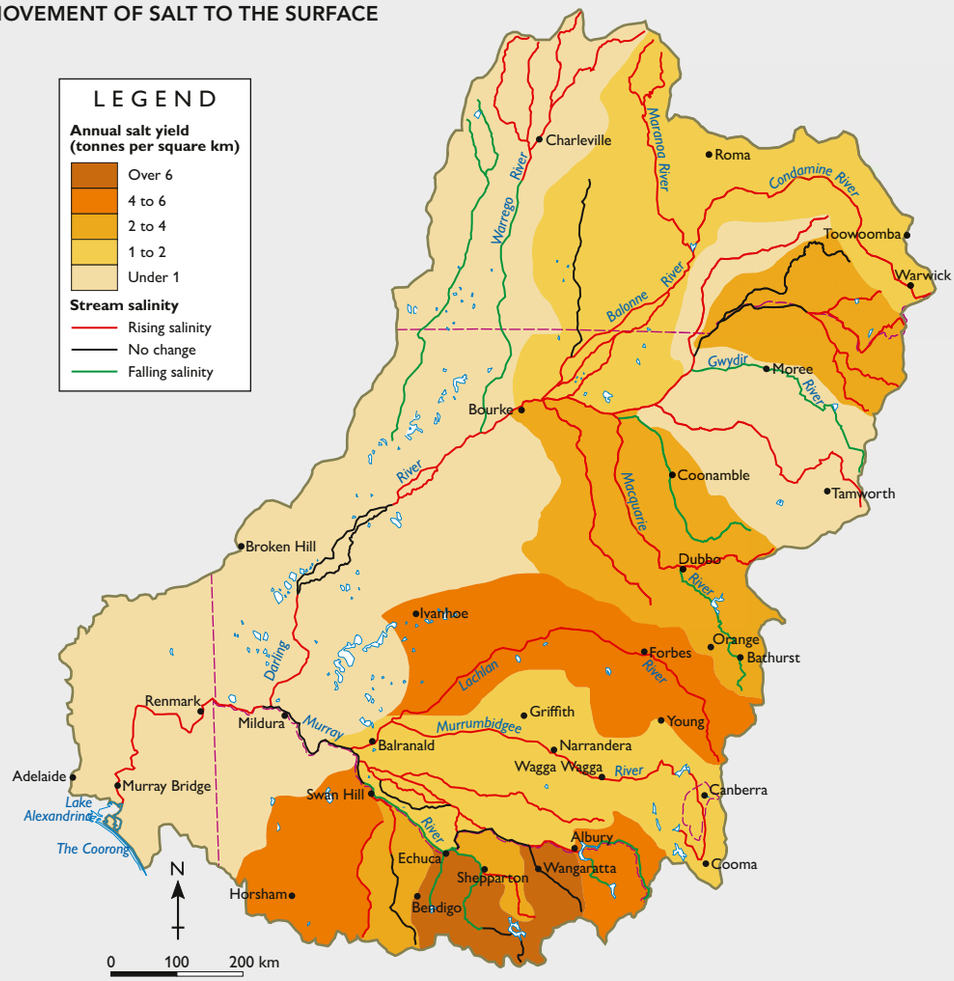

## MURRAY–DARLING BASIN: WATER CONSUMPTION BY AGRICULTURAL COMMODITY



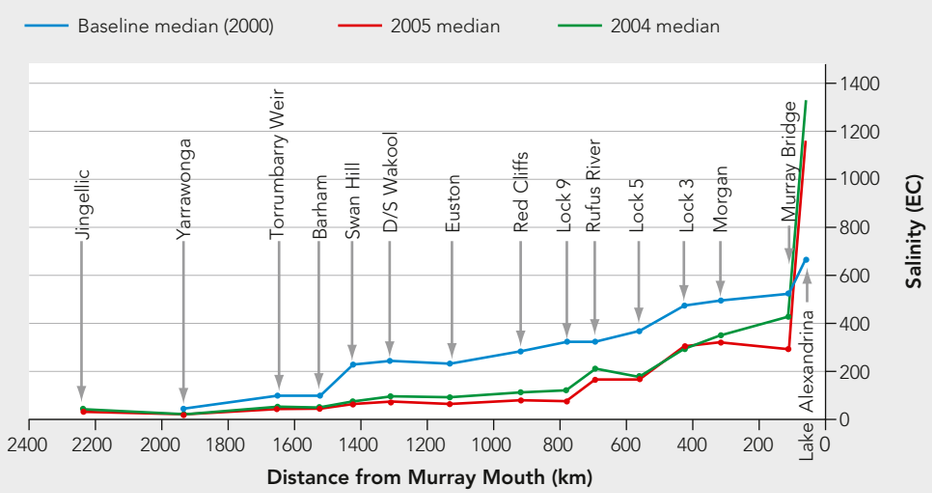
## Salinity in the Murray–Darling Basin

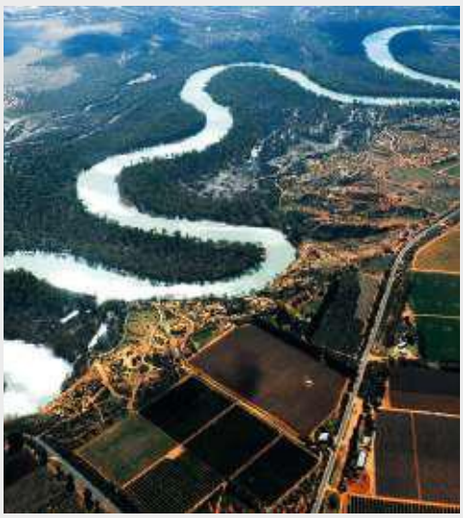
The Murray–Darling Basin's flat terrain, low rainfall and high evaporation have combined to concentrate salt in the soil and groundwater. The clearance of vegetation has caused groundwater levels to rise and bring salt near to the surface, killing vegetation and increasing salt levels in streams. This process is known as dryland salinity. Adding water to the water table through irrigation has also increased salinity in the Murray–Darling Basin.

**MURRAY–DARLING BASIN: MOVEMENT OF SALT TO THE SURFACE**




**MURRAY–DARLING BASIN: SALINITY LEVELS**



▲ The Murray–Darling Basin supports a wide variety of land uses.

▲ Increased salinity in the Murray–Darling Basin

▲ Saltbush is one of the few plants in the world that can actually take salt out of the water it draws in. Over time the saltbush lowers the water table, enabling other native plants to also grow.

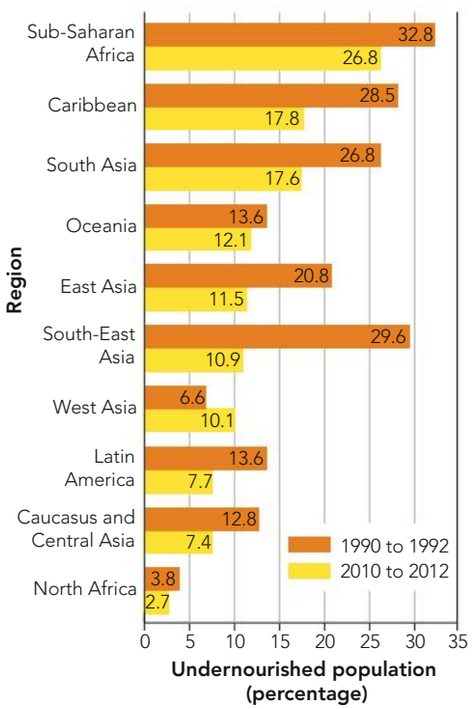
# Global food security

Food security exists when all people at all times have enough safe, nutritious food to sustain an active and healthy life. Achieving food security is based around three principles:

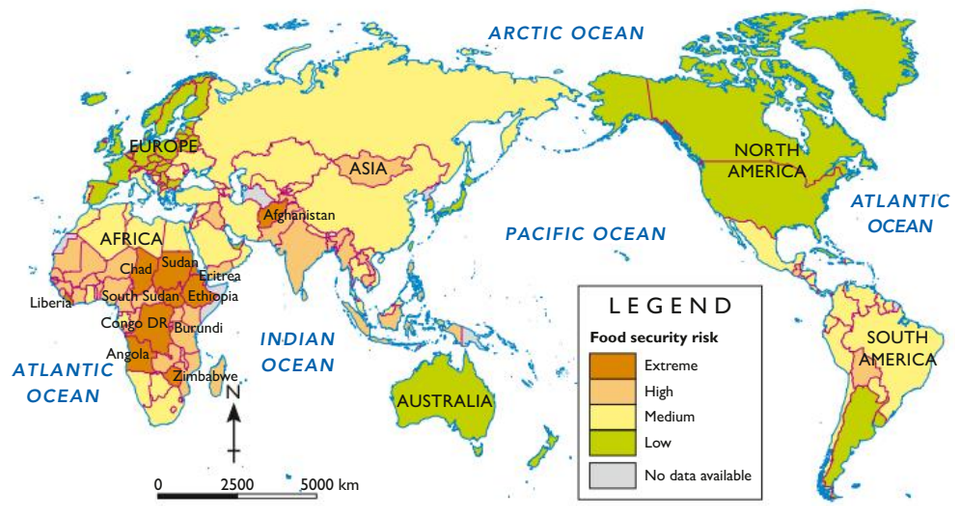
- food availability – people have enough food of appropriate quality available on a consistent basis
- food accessibility – enough food is available and it must be in reach of those that need it
- using food appropriately – using food safely and applying knowledge about nutrition, clean water and sanitation when preparing food.

Famine and hunger are the result of food insecurity. More than 800 million people do not have enough food to eat on a regular basis and six million children die of hunger every year. While poverty rates are falling around the world, 1.5 billion people live in extreme poverty. This group is extremely vulnerable to global food price increases and the impacts of food insecurity. As the world's population continues to grow, the threat of food insecurity is increasing in many places.

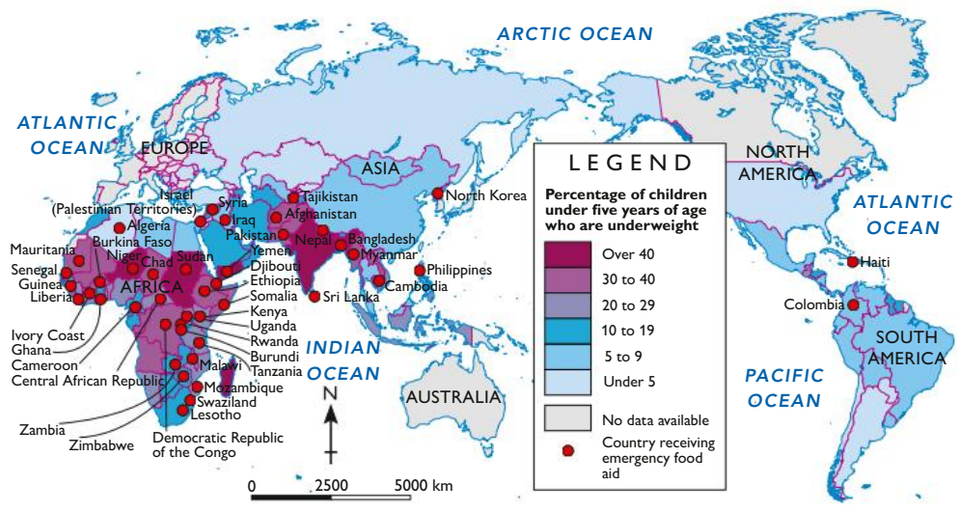
**WORLD: UNDERNOURISHED POPULATION**




**WORLD: FOOD SECURITY RISK**




**WORLD: UNDERWEIGHT CHILDREN**

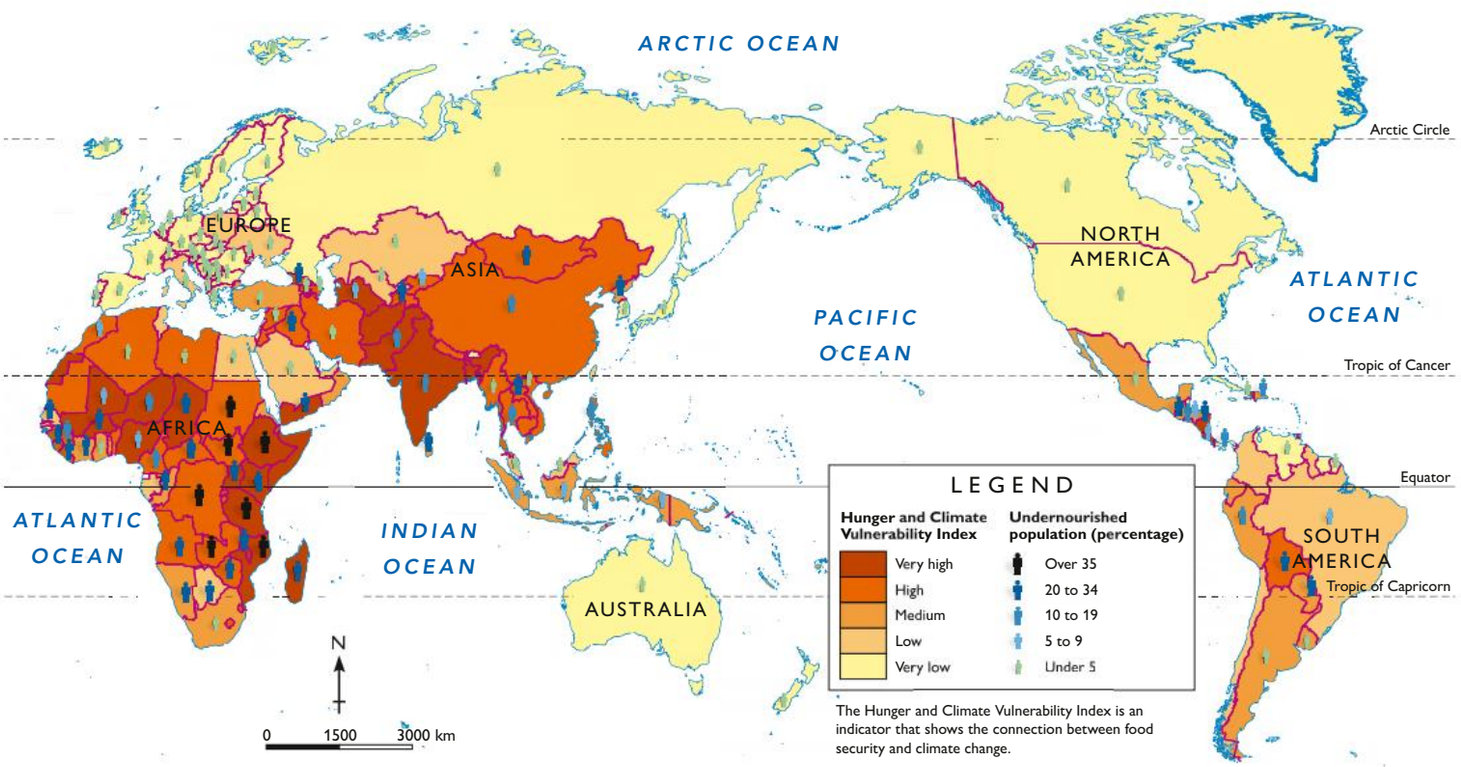



These Somali women are waiting in line to ► receive food aid in their country's capital, Mogadishu. They are the victims of the Horn of Africa famine in 2011 to 2012, which was caused by drought, conflict and restrictions on delivery of food aid. As a result, more than 13 million people experienced food insecurity.

## Global food security and climate change

The Earth's climate is changing due to human activities such as burning of fossil fuels and land clearing. Temperatures and sea levels are rising, rainfall patterns are changing, as are ecosystem services such as pollination. These changes are having an impact on agriculture in many places and also on food security. These impacts are expected to increase as temperatures continue to rise in the future. Some studies estimate that an additional 100 to 200 million people could be at risk of hunger due to climate change by 2050.

**WORLD: FOOD INSECURITY AND CLIMATE CHANGE**

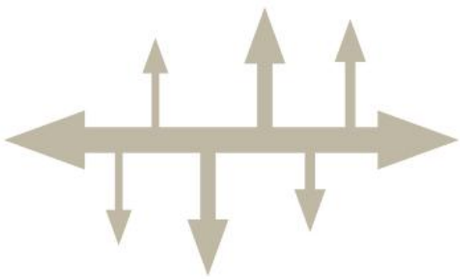



▲ As sea levels rise, low-lying farming regions become inundated with salt water degrading the soil, killing crops and affecting freshwater resources.

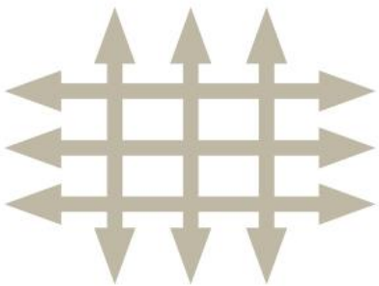
▲ Crop and pasture yields are expected to decline in dry, tropical regions. This will have the greatest impact on subsistence farmers.

# Connecting through transportation and trade

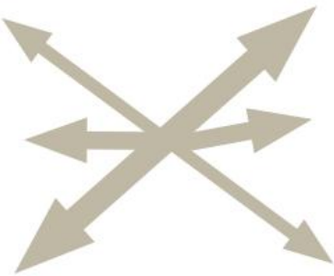
Transportation is the movement of people, animals and goods from one location to another. This movement can occur over land, by air and by sea. Throughout history, transportation has been essential in the development of civilisations, facilitating trade and a greater spread of people. The term 'transportation networks' refers to the organisation of transportation infrastructure like roads or railways through an area. They connect people and places, and allow the production and consumption of goods to occur all around the world. Transportation networks are often organised in patterns. Three of the most common patterns are shown below.



▲ Linear pattern – grows in a line in one direction



▲ Grid pattern – forms blocks that run perpendicularly into each other



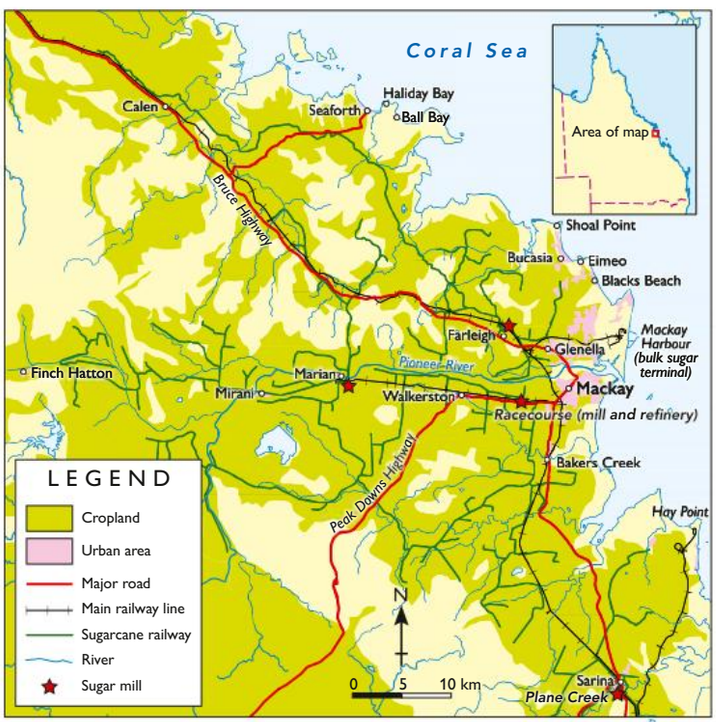
▲ Radial pattern – radiates out from a central point like the spokes on a wheel

## Land

Land transportation networks are usually arranged in a linear pattern and the services that are attracted to them (such as train stations and petrol stations) take on the same pattern. Sometimes land transportation routes will also form a radial pattern. For example, when freeways or railways lead to the centre of a city or a harbour they tend to form a radial pattern.

▲ Over 850 kilometres of railway lines connect the sugar industry in the Mackay region in central Queensland. Narrow gauge railway transports the harvested cane to the sugar mills. These railway lines form a linear pattern.

MACKAY AND SURROUNDS: REGIONAL SUGARCANE NETWORK




▲ The roads leading to the Arc de Triomphe in Paris form a radial pattern.

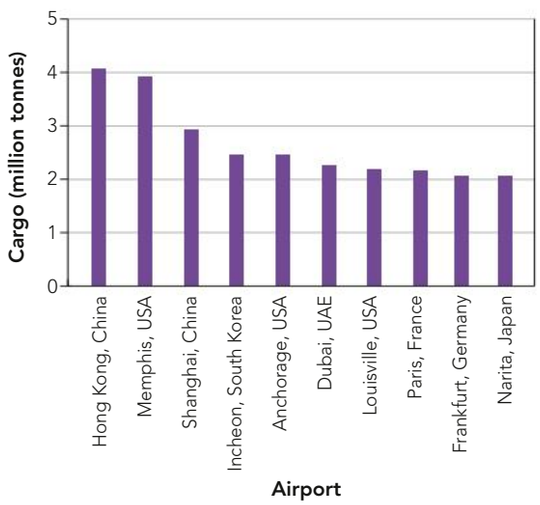
▲ Interconnecting roads form a grid pattern in Chicago in the United States.

## Air

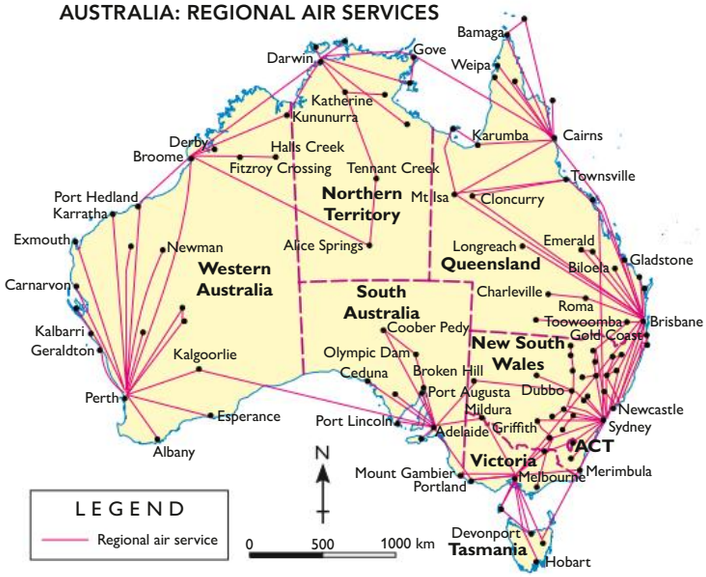
Freight transported by air makes up 40 per cent of global trade value but only 10 per cent of global trade volume. Air cargo allows goods (especially perishables such as food and flowers) to be delivered worldwide in record time. Transportation of freight by air is predicted to grow over 150 per cent by 2026.

Regional air services in Australia form radial patterns as they generally connect to a key airport. For example, Perth is the central access point for the mining industry. The remote location of Western Australian mines means that many workers base themselves in Perth and fly in and fly out of the mining towns.

**WORLD: BUSIEST CARGO AIRPORTS**




**AUSTRALIA: REGIONAL AIR SERVICES**

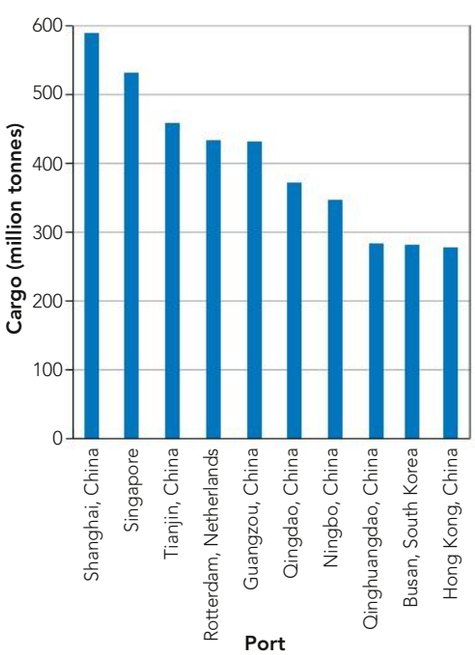



## Sea

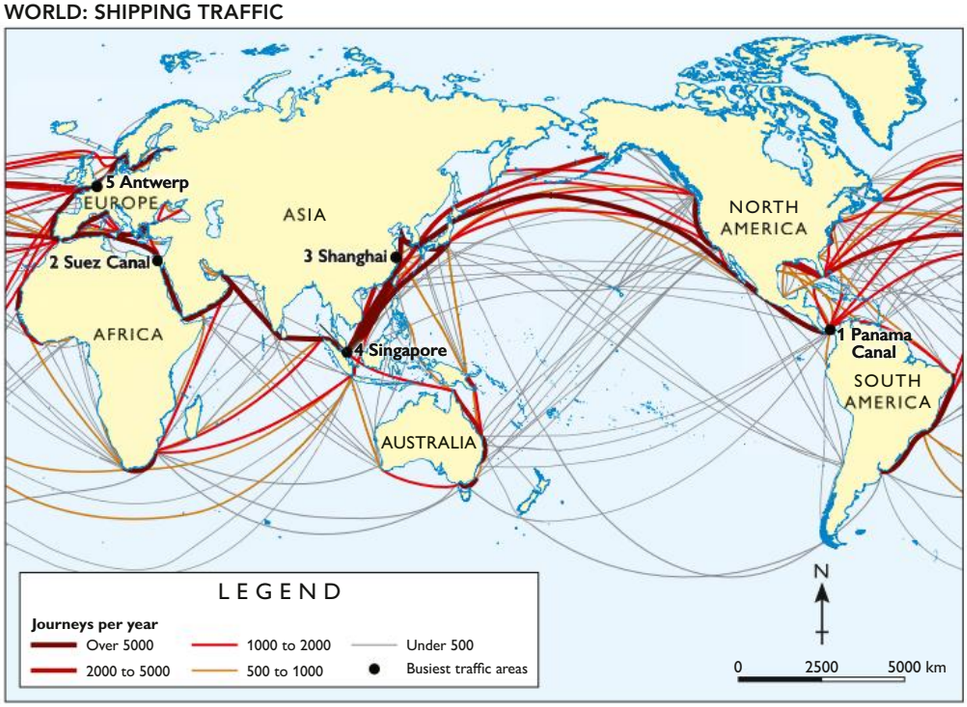
Economic and industrial development, combined with free trade agreements, have resulted in huge growth in global shipping – around 90 per cent of global trade volume is carried by ship. The map below right shows how the transportation of goods by sea connects ports around the world. The five busiest traffic areas are numbered on the map.

The Port of Singapore is the world's second busiest port. It is connected to 600 other ports in 123 countries around the world. It moves 20 per cent of the world's shipping containers and half of the world's supply of oil.

**WORLD: BUSIEST CARGO PORTS**




**WORLD: SHIPPING TRAFFIC**



# Connecting through ICT

Information and communication technologies (ICT) are the broad range of technologies used for accessing, manipulating, presenting and communicating information. They include the Internet, wireless networks, mobile phones and other communication mediums. These technologies have become the most powerful tools of connection the world has ever known.

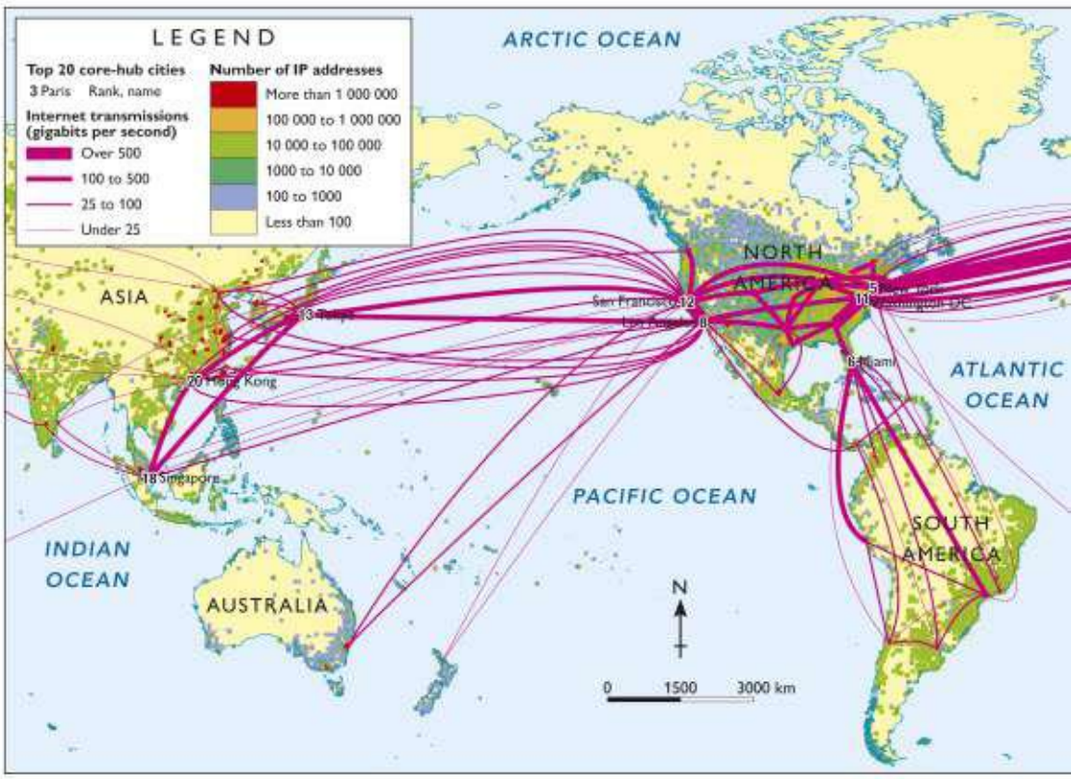
## Internet

The Internet allows people to connect to other people in different places more quickly and conveniently than ever before. Today, we use the Internet for a range of activities and purposes that link us to many places all over the world.

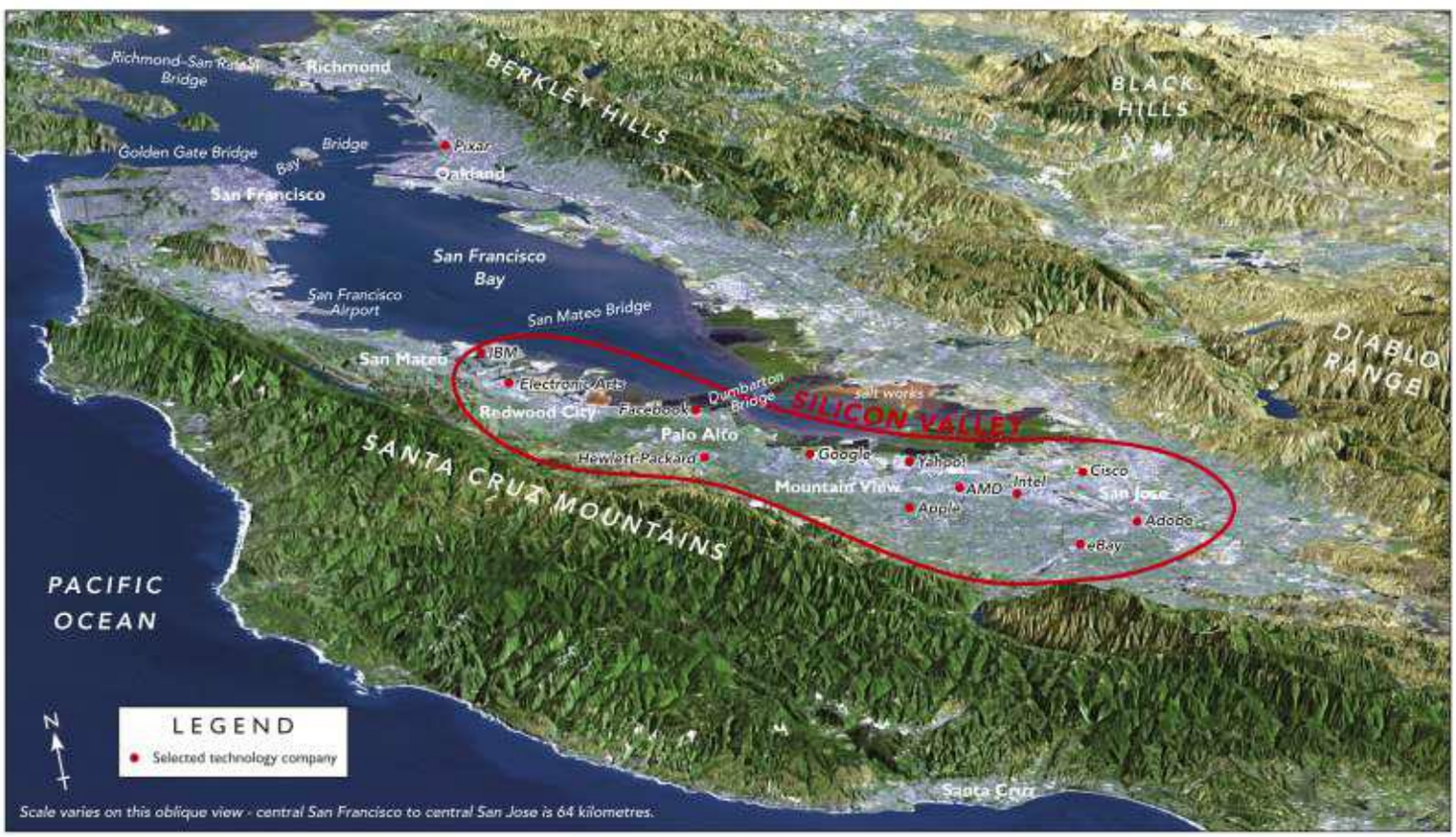
## Silicon Valley, United States

Silicon Valley is the name given to the southern part of the San Francisco Bay area in the United States. It is a world-famous hub for high-tech innovations and development, and home to many of the world's largest technology companies. These companies (some of which are located on the image below) and their technologies have connected people globally.

**WORLD: INTERNET TRAFFIC**

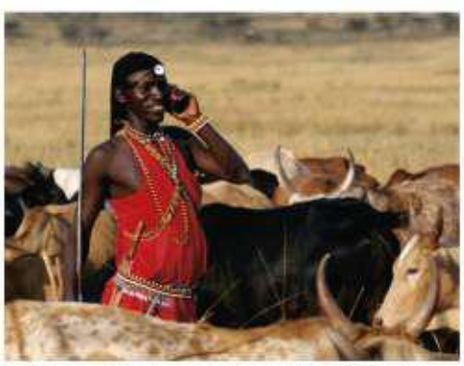



▼ Digital elevation model of Silicon Valley, USA. It was created by draping a satellite image of the region over a model built from digital data collected about the height of the land.



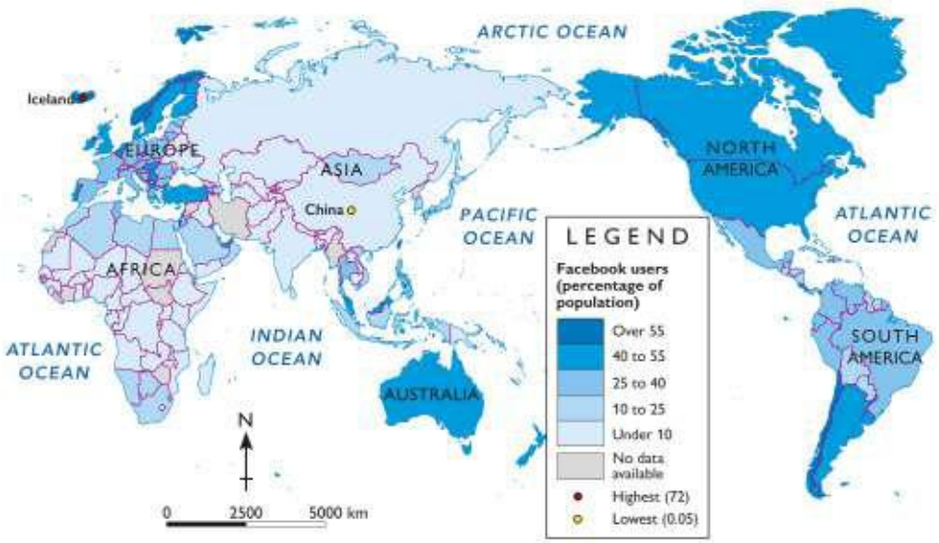

## Mobile phones improving information access in Africa

The number of mobile phone subscriptions has skyrocketed to six billion in the past decade – approximately 75 per cent of the world's population now has access to a mobile phone. Africa is the fastest growing mobile phone market and at present mobile phone penetration is higher than electricity penetration. By 2015, it is predicted that there will be more than 700 million mobile phone users in Africa. The rise in mobile phone subscriptions has greatly increased access to information for Africans. In addition, online banking using mobile phones has changed the lives of many people in remote areas who have previously had to travel for hours to reach a bank.

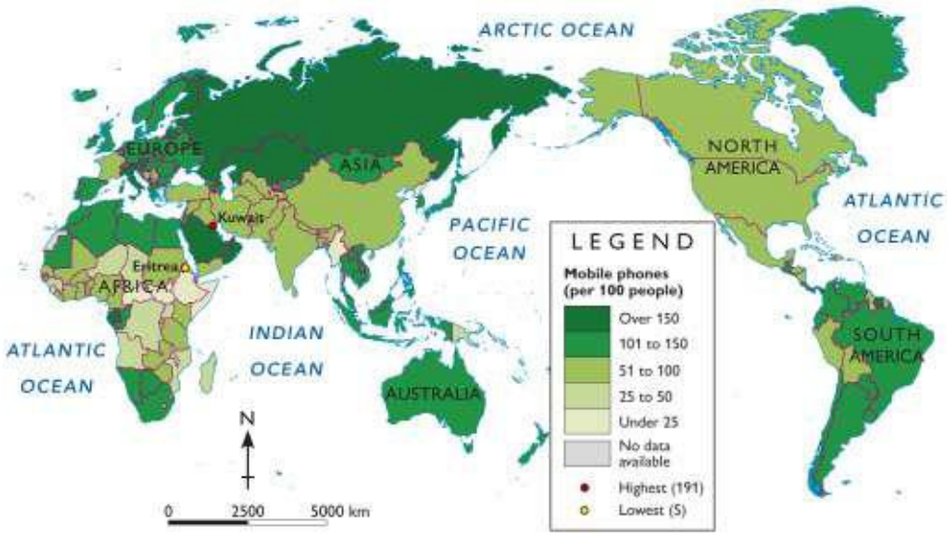


▲ A Masai herder speaks on his mobile phone in a remote location.

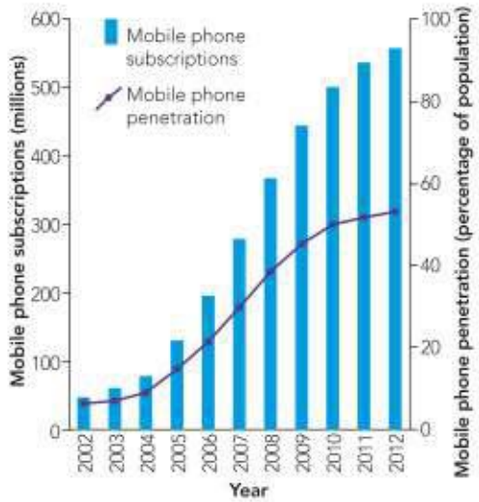
**WORLD: FACEBOOK USAGE**



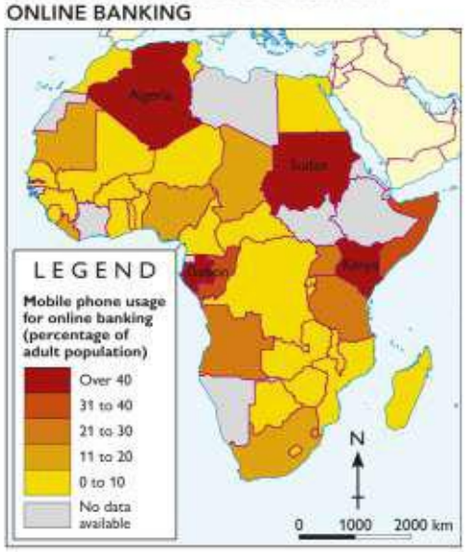

**WORLD: MOBILE PHONE USAGE**




**AFRICA: MOBILE PHONE SUBSCRIPTIONS AND PENETRATION, 2001 TO 2012**




**AFRICA: MOBILE PHONE USAGE FOR ONLINE BANKING**



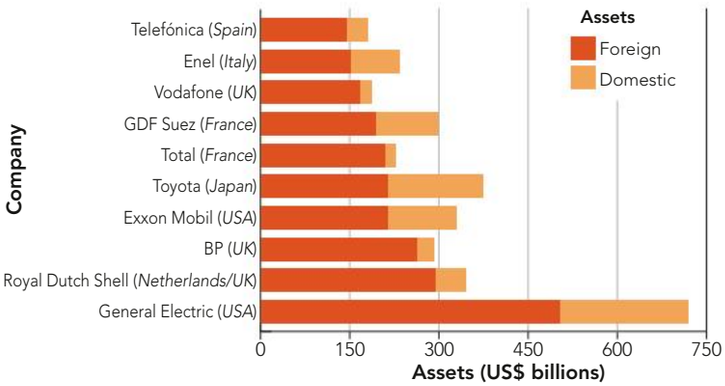
# Connecting through globalisation

Globalisation refers to the increasing interconnections between countries. It includes economic, political and cultural exchange between countries all over the world. This increased movement of goods, services, people and ideas across the world has the potential to improve the lives of millions of people and bring people and cultures closer together. It also has the potential to degrade the natural environment and deepen the divide between the wealthy and the poor.

The importance of national boundaries has been broken down by multinational companies. Large global suppliers view the world as a single market to more profitably manufacture and export goods. For example, a fashion garment may be designed in France, made from Italian fabric, manufactured in China and exported to Australia. The outsourcing of labour has given multinational companies great cost reductions. However, it has also led to the loss of manufacturing jobs in wealthy nations and the exploitation of workers in developing nations.

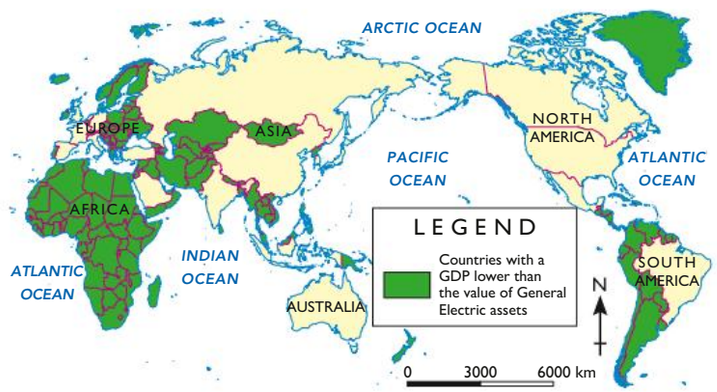
▲ Major electronic companies use production facilities in countries with low labour costs. Workers in this Chinese manufacturing facility are paid less than $10 per hour.

**WORLD: LARGEST MULTINATIONAL COMPANIES**

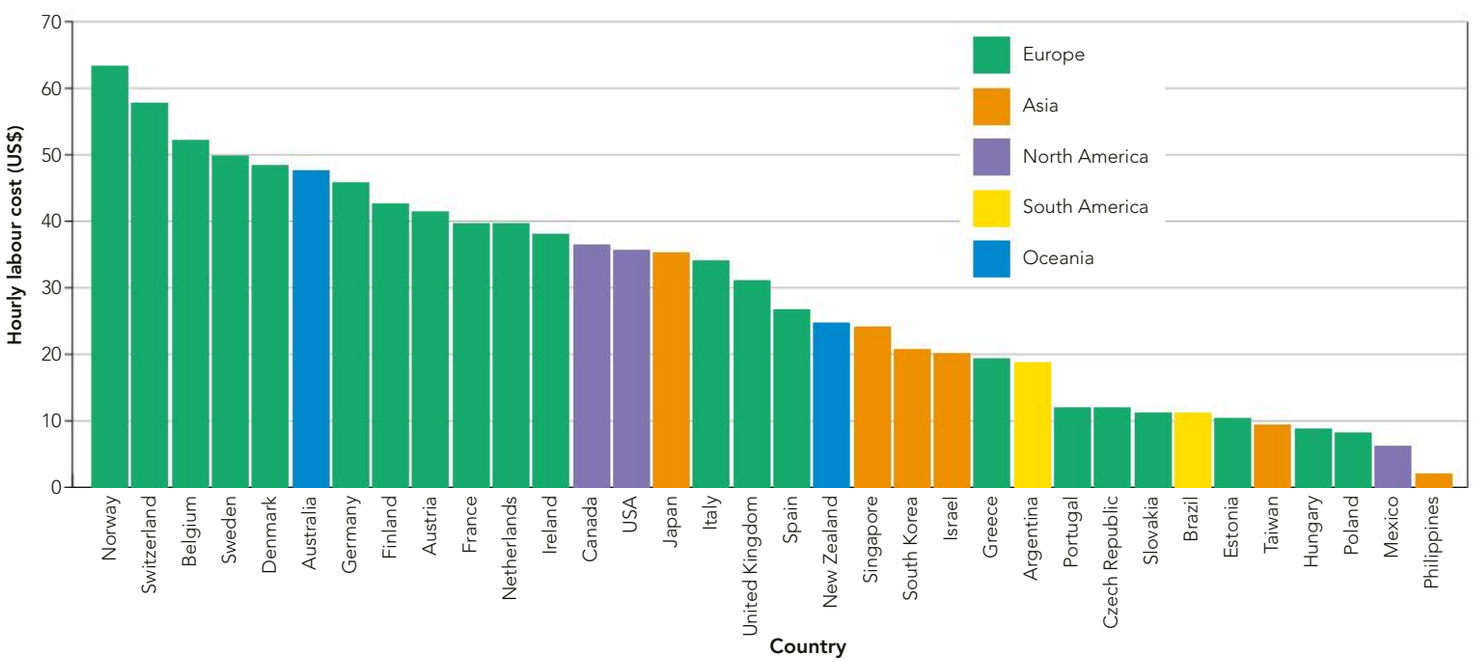



◀ General Electric is a multinational energy, technology and finance company based in the United States. The value of its assets is greater than the Gross Domestic Product (GDP) of all except the 19 richest countries in the world.

**WORLD: VALUE OF GENERAL ELECTRIC ASSETS**




**SELECTED COUNTRIES: HOURLY LABOUR COSTS IN MANUFACTURING**

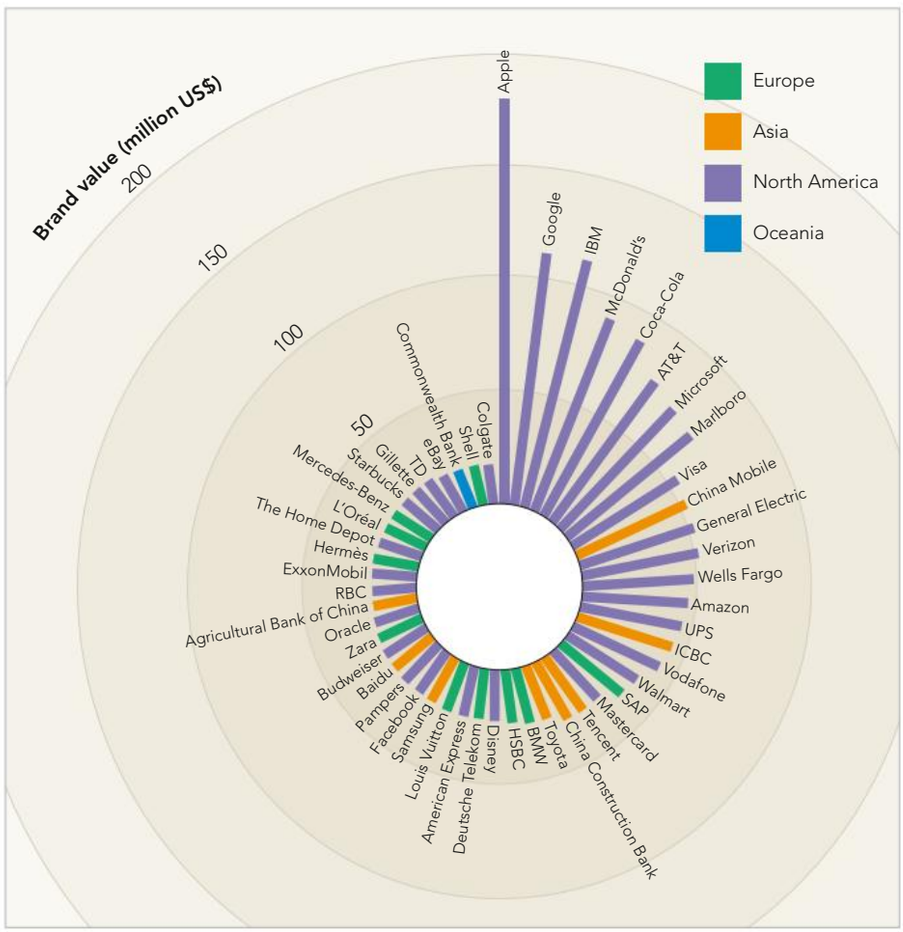


## Global brands

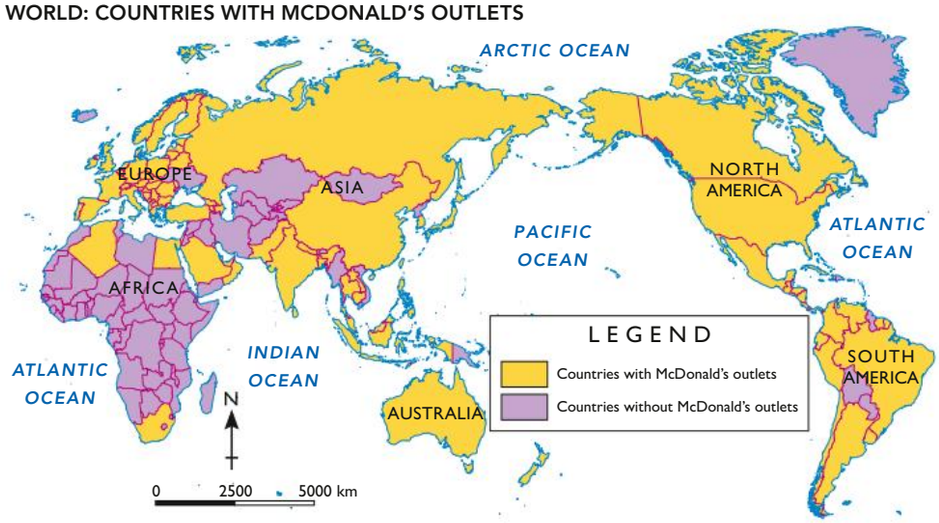
With increased interconnection between regions of the world we have witnessed the rise of global brands. Multinational companies spend billions of dollars establishing brand identity in order to successfully market global products. Over half the top 10 global brands in 2013 were related to information and communication technologies (ICT). However, two of the classic global brands – Coca-Cola and McDonald's – were still in the top 10.

▲ A monk at the Shaolin Monastery in Henan Province, China, is a Burger King customer.

**WORLD: TOP 50 GLOBAL BRANDS**




**WORLD: COUNTRIES WITH MCDONALD'S OUTLETS**





▲ McDonald's largest outlet is located in Moscow, Russia. It is also the busiest McDonald's in the world and has served more than 250 million customers.

**SELECTED COUNTRIES: NUMBER OF MCDONALD'S OUTLETS**


McDonald's outlets:

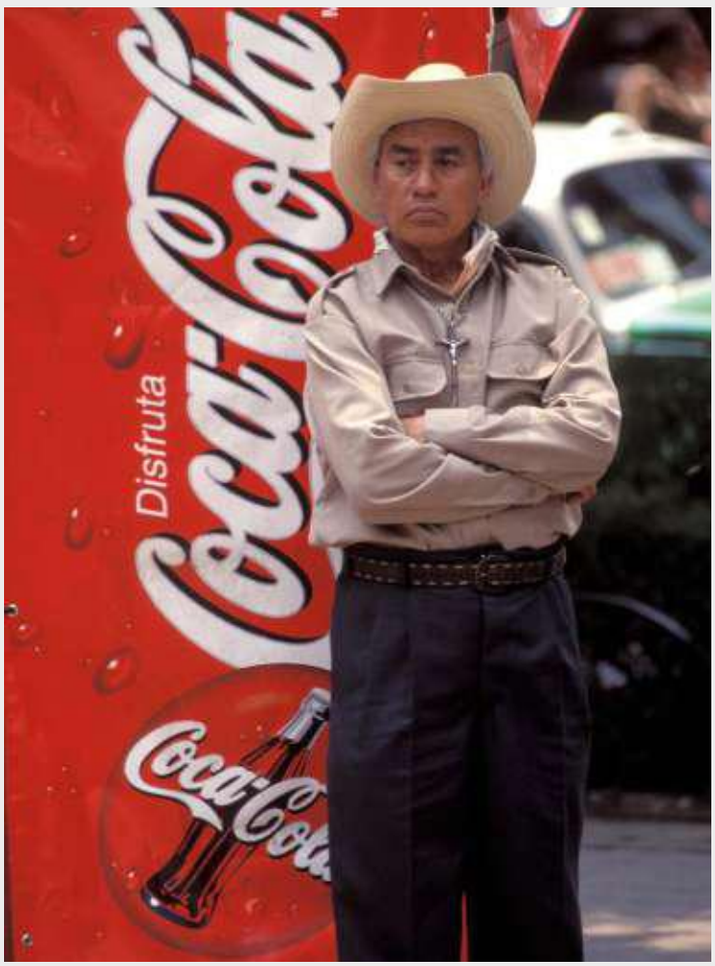
- are found in 118 countries
- serve 68 million customers each day
- number over 34 000 worldwide
- employ more than 1.7 million people.

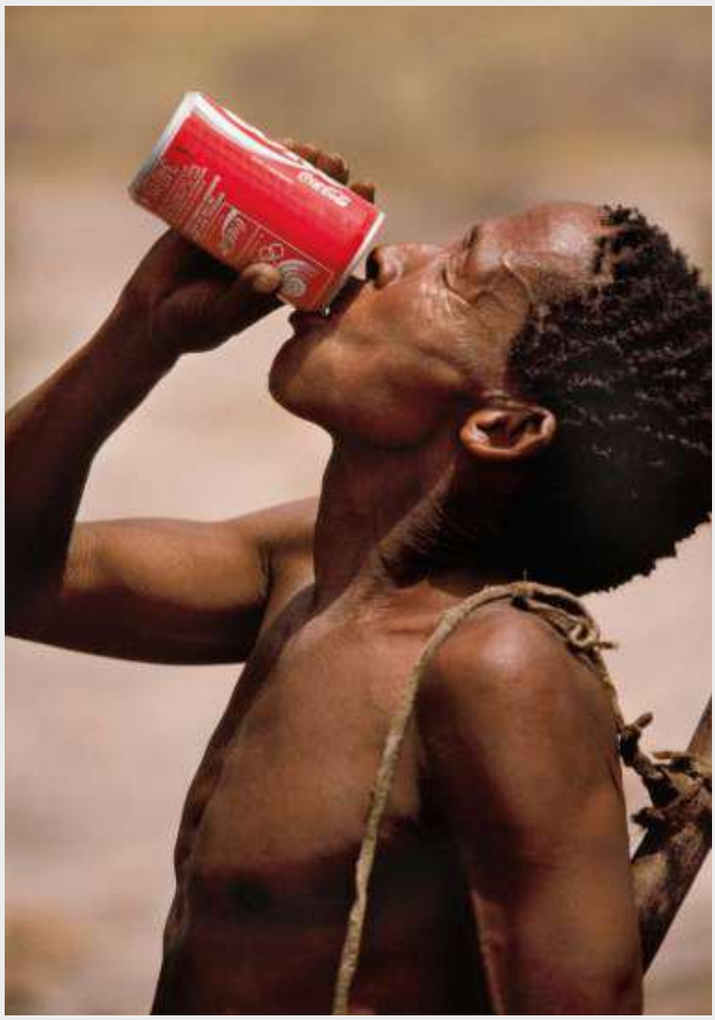
CASE STUDY

# Coca-Cola: A global brand

Coca-Cola Amatil is one of the world's largest and most successful multinational companies. Most well-known for its iconic Coca-Cola drink, the company owns and markets more than 500 different drinks, including Sprite, Fanta and Powerade. From its beginnings in the United States in 1886, Coca-Cola has expanded to become a global brand. There are now only two countries in the world where you cannot buy Coca-Cola: Cuba and North Korea.

Coca-Cola has more than 250 bottling plants around the world and one of the world's most sophisticated distribution networks, which is able to sell 1.8 billion servings of Coca-Cola products per day.

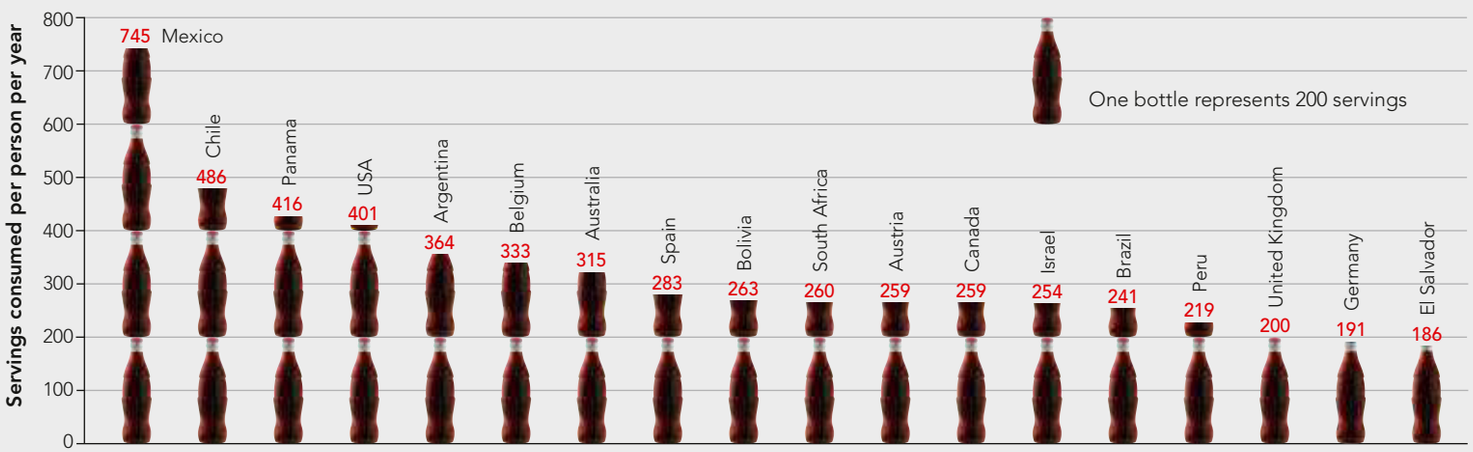


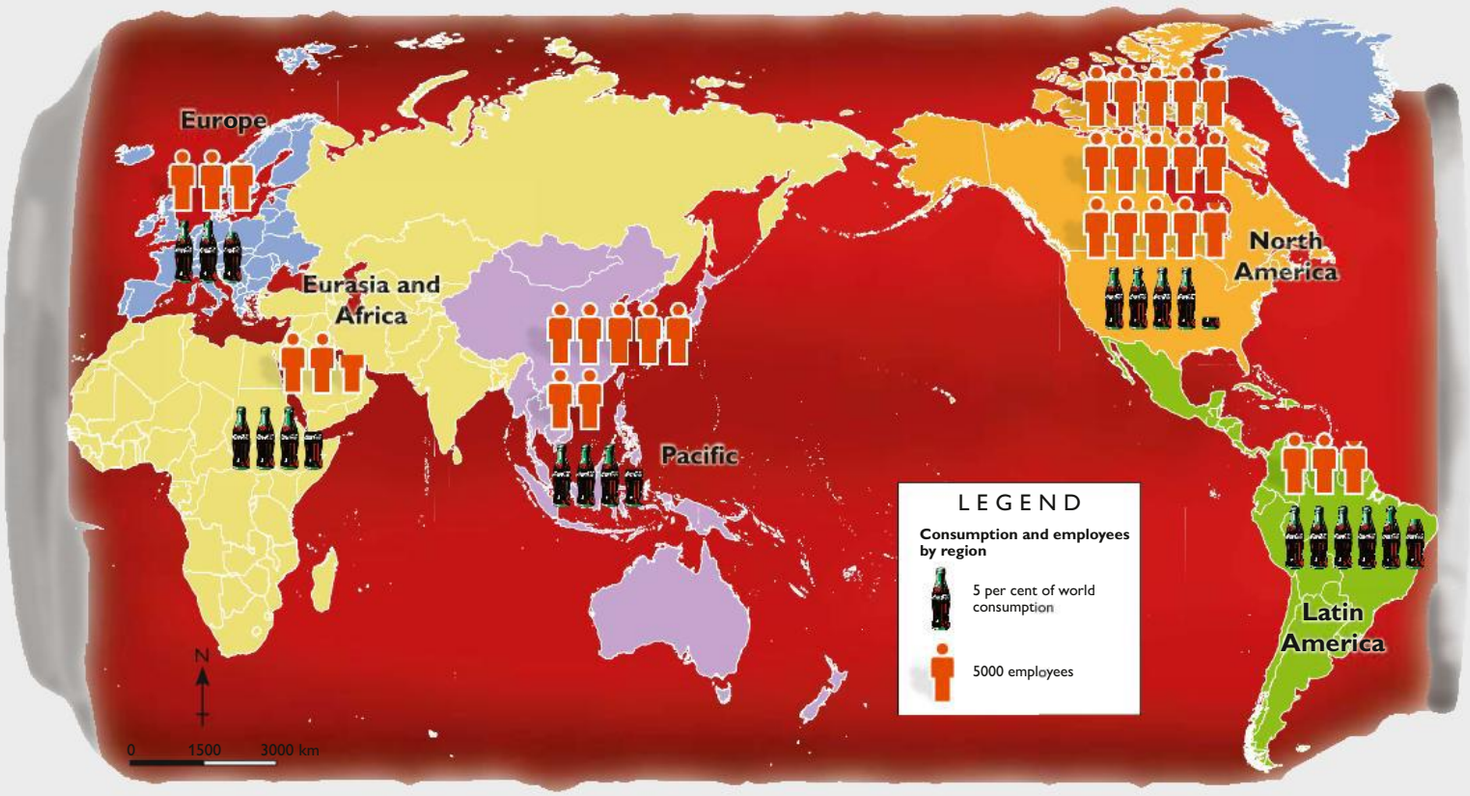
▲ A San tribesman from the Kalahari Desert drinking Coca-Cola. Africans are amongst the lowest consumers of Coca-Cola products, but a complex and well-developed transport network means that in some places Coke supplies are more reliable than water supplies.

◀ Mexicans are the largest consumers of Coca-Cola products on Earth. On average, each Mexican drinks 745 Coca-Cola products a year or more than two per day. To support this demand, a Mexican company, FEMSA, is the largest bottler of Coca-Cola products and operates plants throughout Latin America.

**SELECTED COUNTRIES: CONSUMPTION OF COCA-COLA PRODUCTS**



WORLD: COCA-COLA PRODUCT CONSUMPTION AND EMPLOYEES

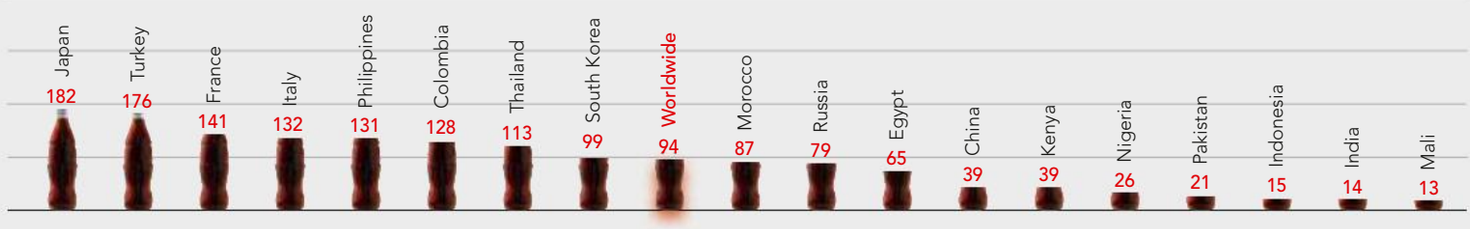




▲ Coca-Cola products are now available in Myanmar following a 60-year suspension of trade due to sanctions being imposed on the South-East Asian country by the United States. Coca-Cola opened a new bottling plant in Myanmar in 2013 and initiated an aggressive marketing strategy that began with handing out 50 000 free samples of the iconic drink.

▲ There are seven Coca-Cola bottling plants in Australia, including this one in Sydney.

More than 650 billion servings of Coca-Cola products are consumed worldwide each year. This is an average of 94 for every person on Earth.



# Connecting through production and consumption

In today's interconnected world, goods are manufactured in many countries and transported to all parts of the globe. Consumption levels around the world have climbed steeply as more people with greater wealth seek to consume more goods and services.

This flow model to the right, known as the supply chain, shows the journey of a product from its source to the consumer and then to its disposal.

**SUPPLY CHAIN**

▲ Stage 1 – Extracting or growing raw materials

▲ Stage 2 – Manufacturing or processing goods

## Top production and consumption countries

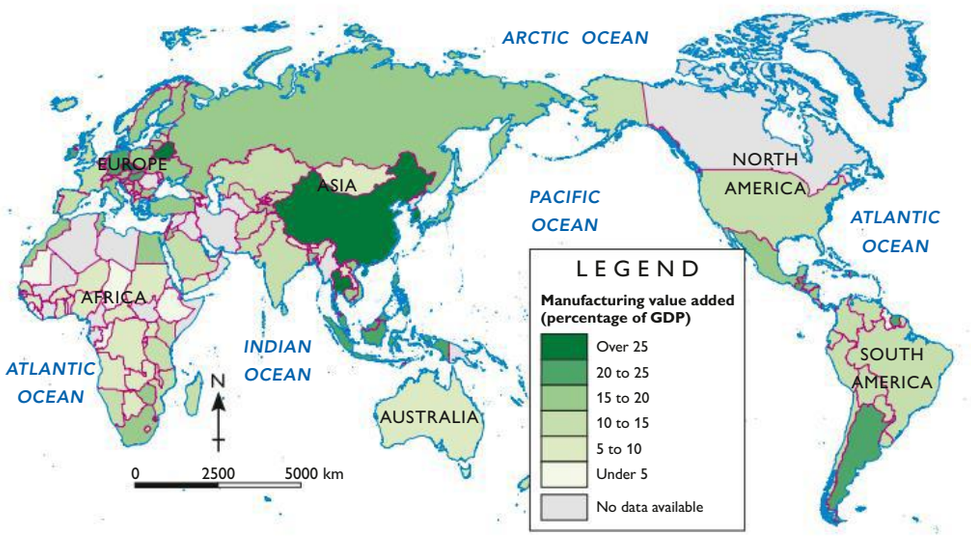
China, the world's fastest growing economy, is both the largest manufacturer and the largest exporter of goods. China produces 20 per cent of the world's manufacturing output. The United States leads the way in world consumption. Generally, other industrialised countries follow behind. China and India are the exceptions. They have low consumption per person, but their enormous populations place them in the top 10 countries for consumption.

**WORLD: TOP 10 MANUFACTURING COUNTRIES**

| RANK | COUNTRY |
|---|---|
| 1 | China |
| 2 | Germany |
| 3 | USA |
| 4 | India |
| 5 | South Korea |
| 6 | Taiwan |
| 7 | Canada |
| 8 | Brazil |
| 9 | Singapore |
| 10 | Japan |

Based on percentage of world manufacturing output in 2013

**WORLD: MANUFACTURING**

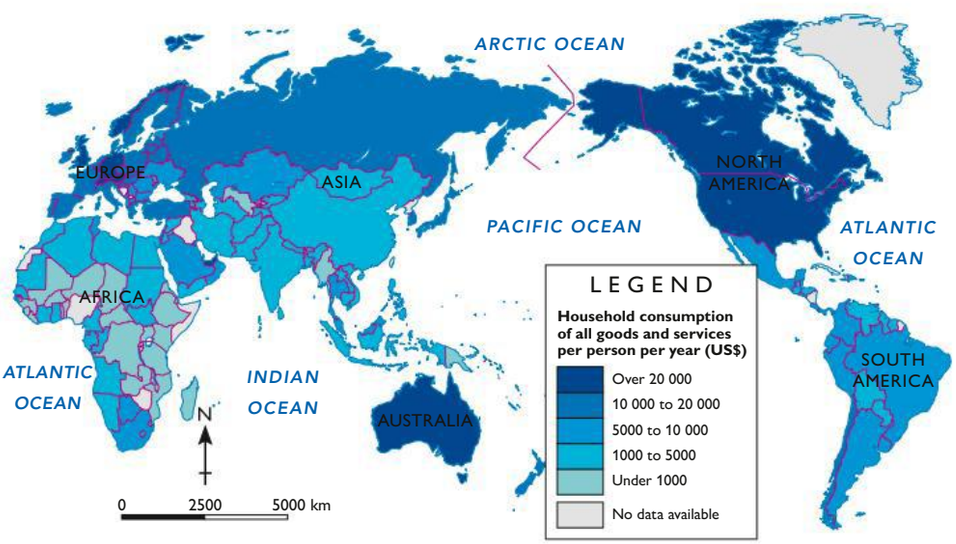



**WORLD: TOP 10 CONSUMPTION COUNTRIES**

| RANK | COUNTRY |
|---|---|
| 1 | USA |
| 2 | Japan |
| 3 | China |
| 4 | Germany |
| 5 | United Kingdom |
| 6 | France |
| 7 | Brazil |
| 8 | Italy |
| 9 | India |
| 10 | Canada |

Based on value of gross household consumption in 2013

**WORLD: HOUSEHOLD CONSUMPTION**




▲ **Stage 3** – Distributing goods from one place to another

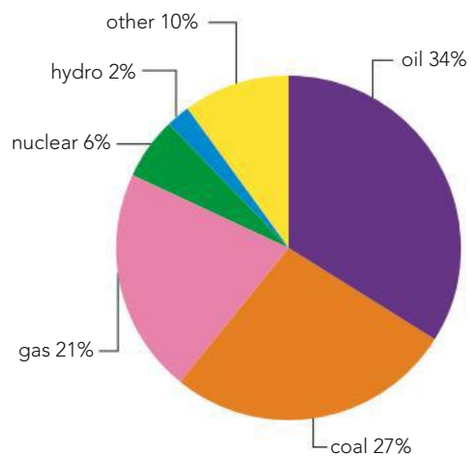
▲ **Stage 4** – Consuming goods

▲ **Stage 5** – Waste is produced after consumption

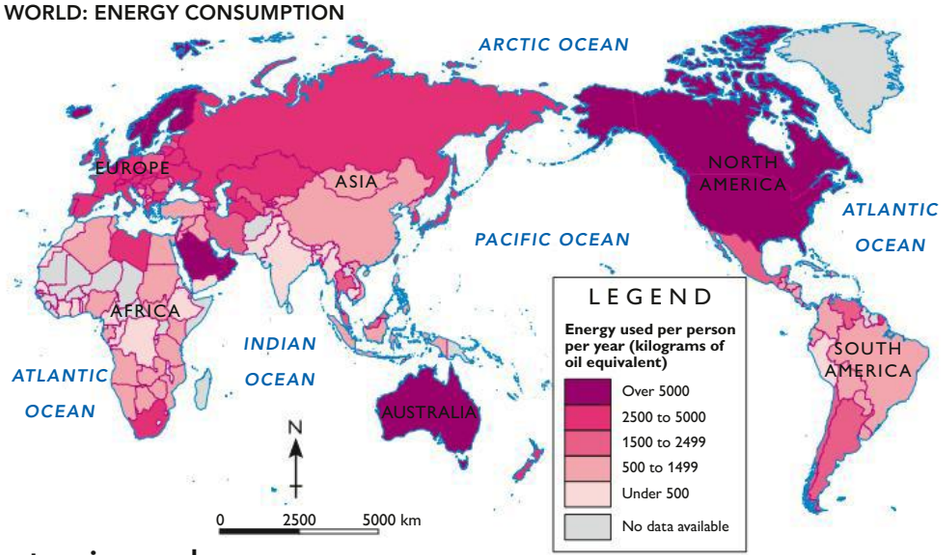
## Production and consumption of energy

Global consumption of coal, oil and gas has doubled since 1970, and electricity consumption has tripled. Demand for energy is likely to increase by a further 50 per cent by 2030. Yet still, 1.5 billion people on Earth live without electricity. Increased burning of fossil fuels to produce electricity leads to pollution and increases carbon dioxide levels in the atmosphere, contributing to global warming.

**WORLD: ENERGY PRODUCTION**



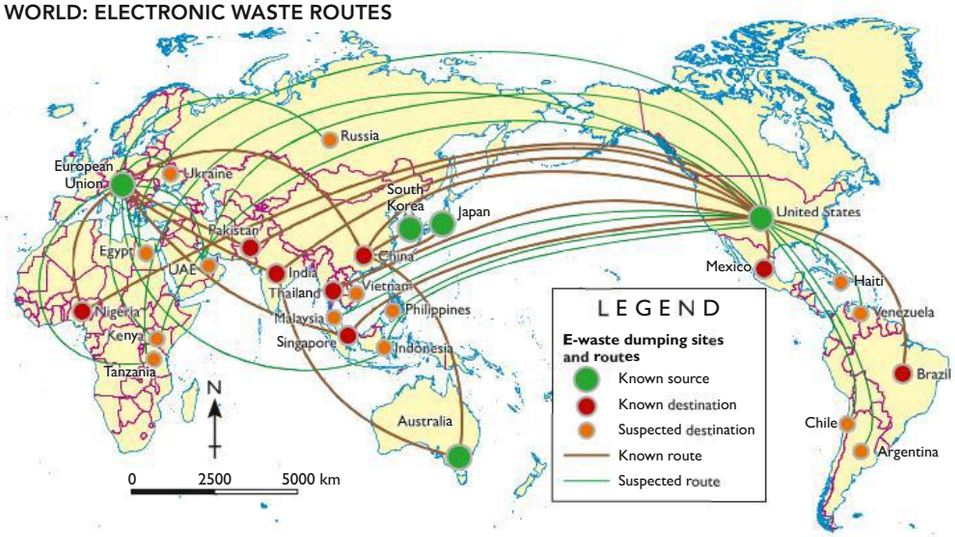

**WORLD: ENERGY CONSUMPTION**




## Production and consumption of electronic goods

With the rising consumption of electronic goods worldwide, up to 50 million tonnes of electronic waste are produced every year. Discarded computers, mobile phones and televisions, known as e-waste, contain significant amounts of heavy metals and have the potential to pose serious health and environmental threats. Recycling e-waste is labour intensive and therefore costly.

**WORLD: ELECTRONIC WASTE ROUTES**



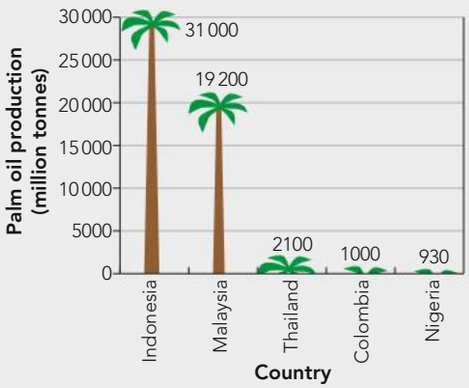

◀ Many developed countries ship their e-waste to poorer countries with lower wages and few health and safety regulations. In many communities in Africa and Asia, people pull apart e-waste by melting plastics, releasing dangerous chemicals into the air.

CASE STUDY

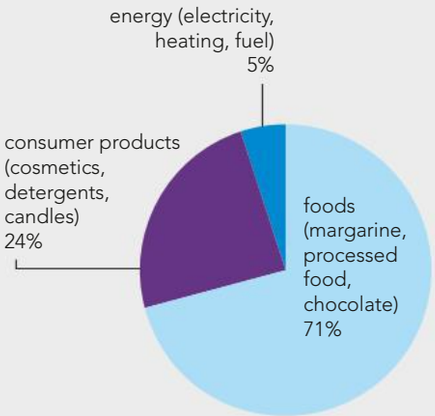
# South-East Asia: Palm oil industry

Oil-producing palm trees were introduced into South-East Asia in the 1970s from west Africa. Palm oil is the cheapest vegetable oil to produce and refine, and worldwide demand has increased sharply in recent years. Today, it is the most widely used vegetable oil – about half of all packaged items found in supermarkets contain palm oil. Malaysia and Indonesia produce about 90 per cent of the world's palm oil. They export 91 per cent and 70 per cent, respectively. The major consumers of palm oil are India, China, the European Union and Indonesia. The development of oil palm plantations in Malaysia and Indonesia is the leading cause of rainforest destruction.

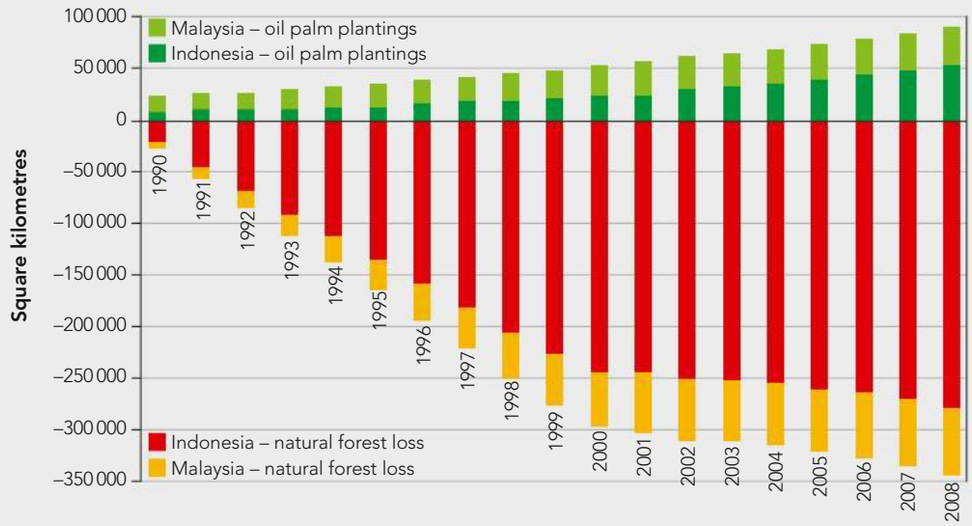
**WORLD: TOP PALM OIL PRODUCING COUNTRIES**




**WORLD: PALM OIL CONSUMPTION BY USE**




**INDONESIA AND MALAYSIA: OIL PALM PLANTINGS AND FOREST LOSS**




**SOUTH-EAST ASIA: CHANGE IN FOREST COVER**


**PALM OIL SUPPLY CHAIN**

▲ Stage 1 – Oil palms are grown in plantations. Oil palm fruit is harvested and taken to a local mill for processing.

▲ This oil palm plantation is located near Kuala Lumpur, Malaysia's capital city. The palm trees are planted in terraces cut into the contours of the hills. Terracing is used to reduce erosion in steep areas. Patches of the original rainforest can be seen in the right of the image. Oil palm plantations now cover 11 per cent of Malaysia's land area, replacing over 33 000 square kilometres of rainforest.

▲ **Stage 2** – Oil is extracted from the fruit at the mill.

▲ **Stage 3** – Palm oil is shipped all over the world and made into products.

▲ **Stage 4** – Some of the many products in our supermarkets that contain palm oil.

▲ **Stage 5** – Waste is generated at the mill and from the packaging of palm oil products.

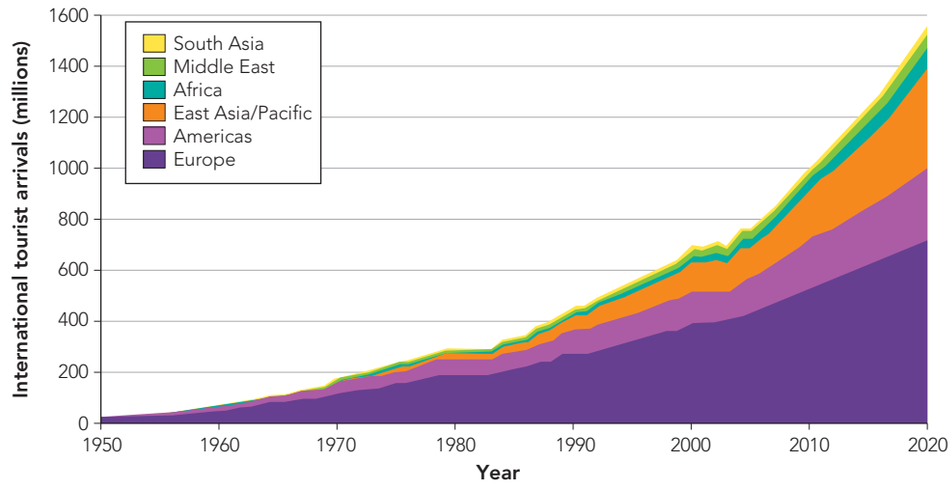
# Connecting through tourism

Tourism is a popular global leisure activity and the world's largest industry. In 2013, more than one billion people travelled to a different country for the purpose of leisure. Together they spent about $1 trillion, generating an important source of income for the countries they visited. Tourism can bring great change to the places that tourists visit. As tourism continues to grow, these changes are expected to become larger and more difficult to control.

## Different types of tourism

Tourists travel for many reasons. Some want to relax while others are keen to experience the culture, history and natural environments of the places they visit.

**WORLD: INTERNATIONAL TOURIST ARRIVALS BY REGION**




### Recreational tourism

Recreational tourists travel to relax and enjoy the attractions and activities on offer in the places they visit.

Times Square in New York is among the most popular destinations in the world for recreational tourists.

### Historical tourism

Historical tourists are interested in learning about the history of places and people. They visit important buildings and view artefacts and monuments.

Machu Picchu in Peru attracts visitors because of its historical significance.

### Wilderness tourism

Wilderness tourists enjoy visiting remote places such as the Amazon rainforest, Antarctica or the Himalayas.

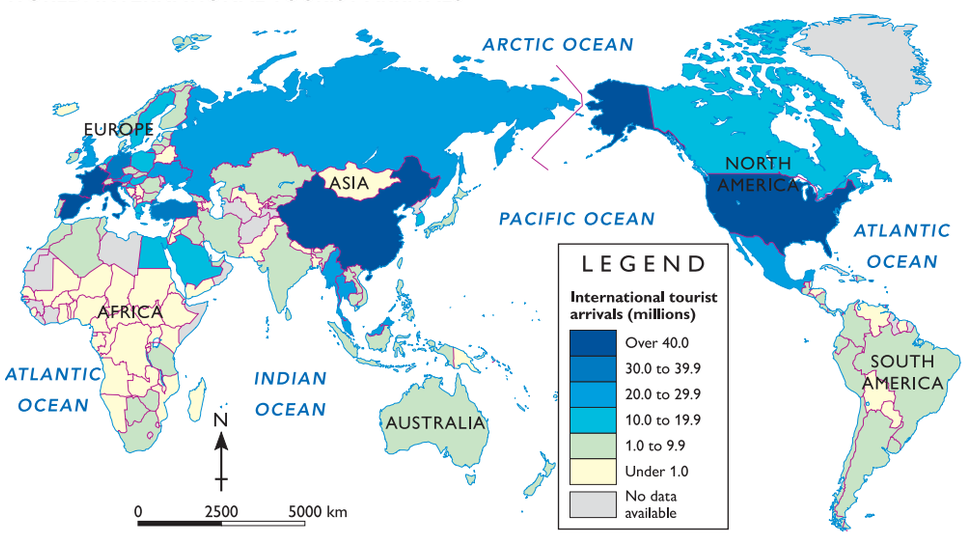
These climbers on Mount Everest wait their turn to reach the summit.

### Ecotourism

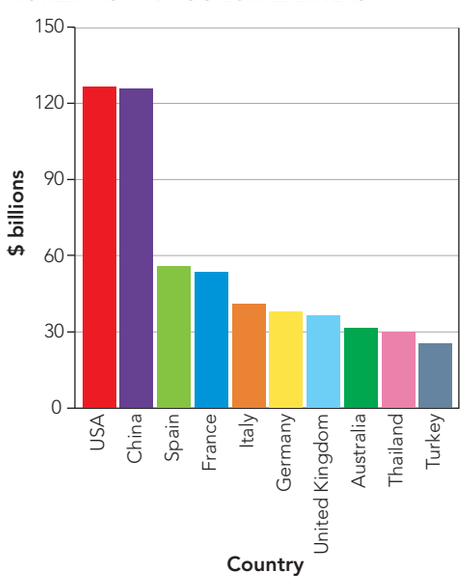
Ecotourists travel to natural areas that are relatively undisturbed and consciously minimise their impact on the environment.

In central Africa, ecotourism brings about $20 million a year to the region – much of this is used to preserve the habitat of mountain gorillas.

**WORLD: INTERNATIONAL TOURIST ARRIVALS**




**WORLD: TOP 10 TOURISM EARNERS**

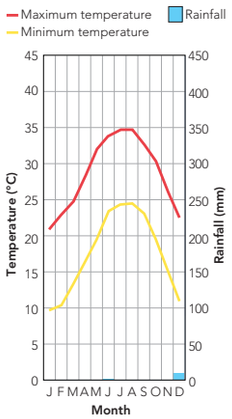


## Golf in the desert

Egypt's Red Sea coastline is undergoing a dramatic transformation. In this desert region there is virtually no rainfall and little natural vegetation. However, large tourist resorts are being built to cater for tourists from Europe, Egypt and other parts of the world. Tourists are attracted to the region by the warm climate, by water sports such as diving on the Red Sea coral reefs and by the opportunity to play golf. El Gouna is one of the largest tourist centres in the area. It is home to more than 20 000 permanent residents and 17 hotels. A desalinisation plant supplies water to this arid region and waste water is treated and used to water the golf course and gardens.

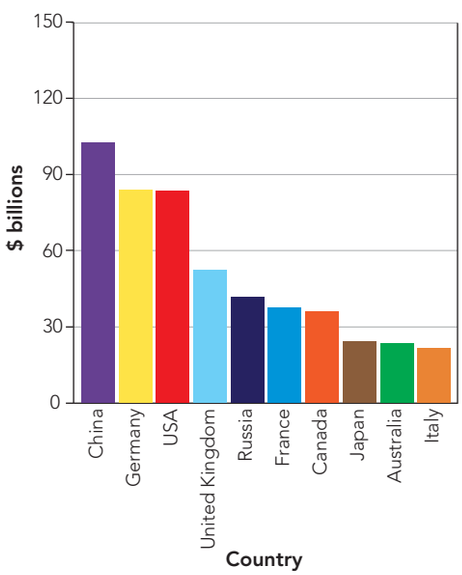

▲ Satellite image of a resort and golf course at El Gouna, Egypt

EL GOUNA: CLIMATE GRAPH

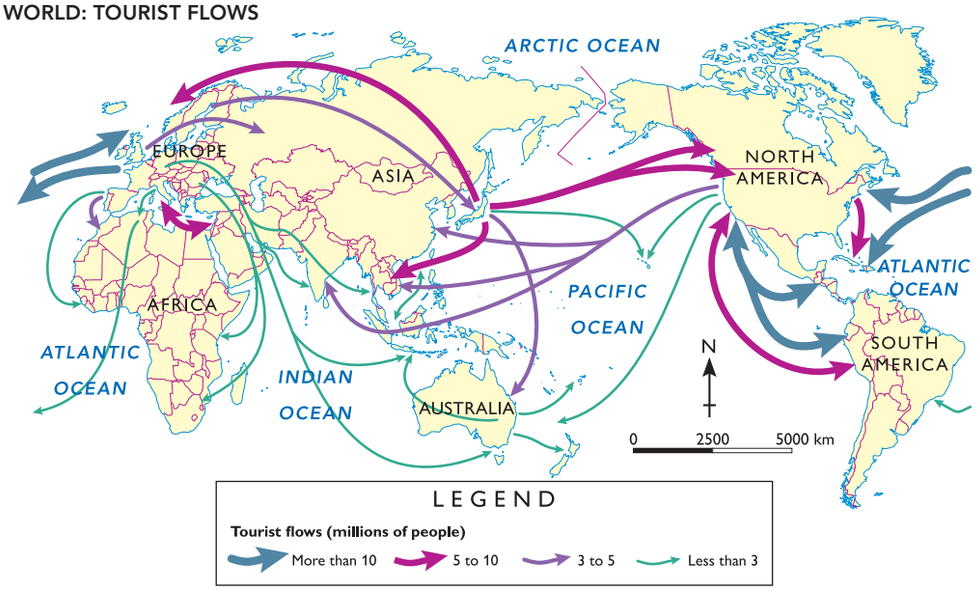



▲ Resort at El Gouna, Egypt

WORLD: TOP 10 TOURISM SPENDERS




WORLD: TOURIST FLOWS



# Pollution

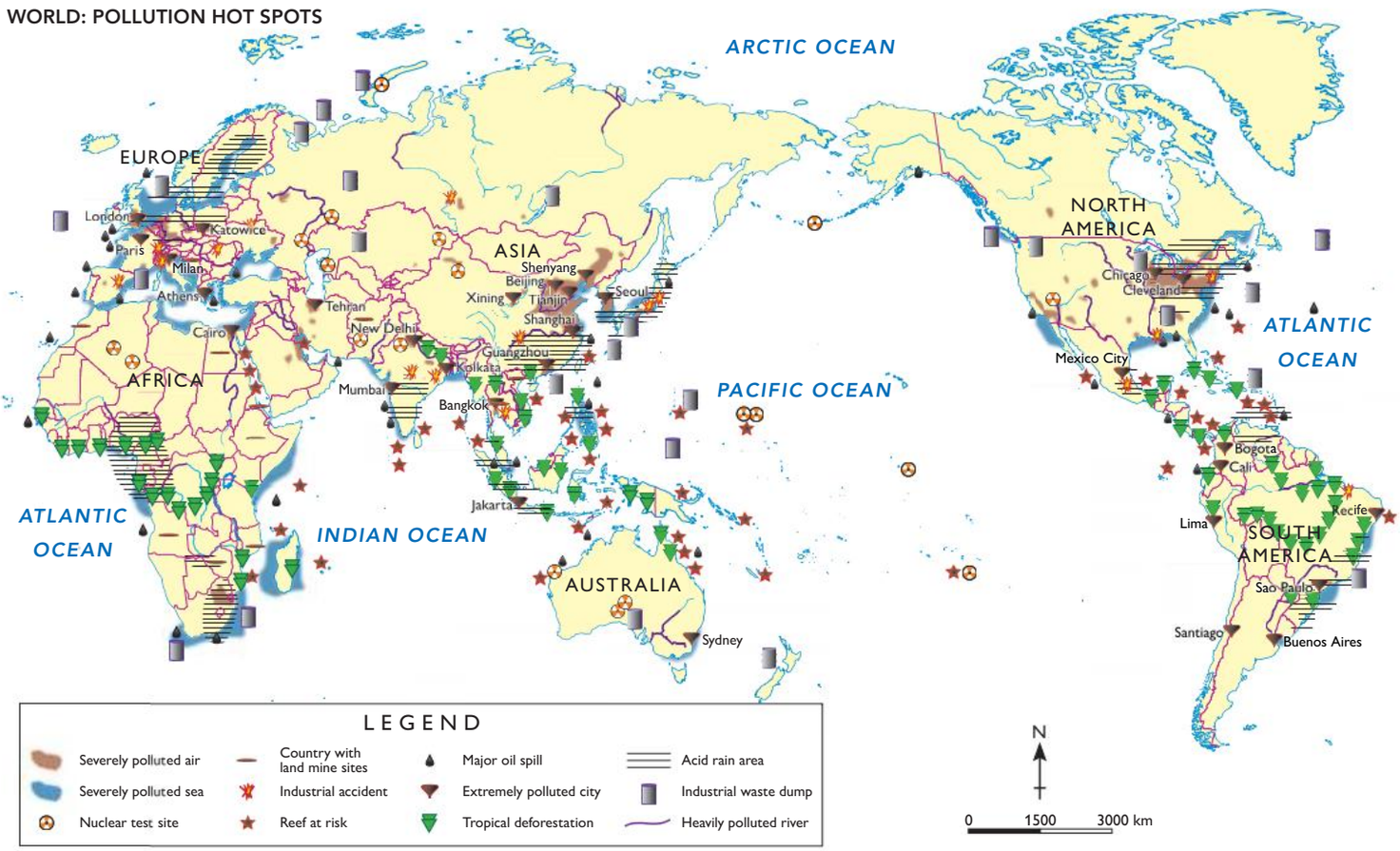
Growing world population has put great pressure on the natural environment. The environment provides all organisms (including humans) with air, light, water and food – ecosystem services that are needed for survival. Humans have the ability to degrade the environment to such an extent that these services become threatened.

## Pollution around the world

Pollution is the introduction of any substance into the environment that has harmful or poisonous effects. Polluting substances reduce the ability of the environment to provide ecosystem services. The major types of pollution are:

- air pollution – industry, power generation and motor vehicles release pollutants into the air that can cause smog, haze and acid rain
- land pollution – poor agricultural practices, industrial waste and urban waste contribute to land pollution
- water pollution – shipping, deep sea oil drilling, farming (especially the use of fertilisers and pesticides), littering, land clearing and industry can pollute waterways.

**WORLD: POLLUTION HOT SPOTS**




▲ Smog in Duisburg, Germany. The city is renowned for its steel industry.

▲ Air pollutants combine with sunlight, oxygen and moisture and fall as acid rain. These trees in Slovakia have been damaged by acid rain.

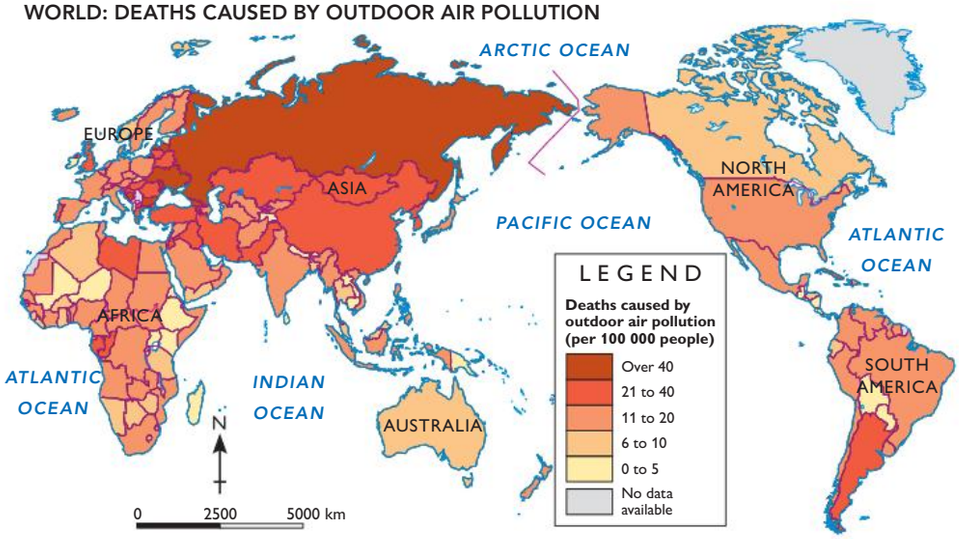
▲ A young boy in polluted water in Bangkok, Thailand.

FAST FACTS

## Air pollution

According to the World Health Organization, air pollution is one of the fastest growing health risks in the world. In 1990, 800 000 people died from exposure to outdoor air pollution. In 2012, this figure had risen to approximately 3.7 million people and 88 per cent of these deaths occurred in low- and middle-income countries. National and international policies in areas such as power generation, transport and industry can help reduce air pollution.

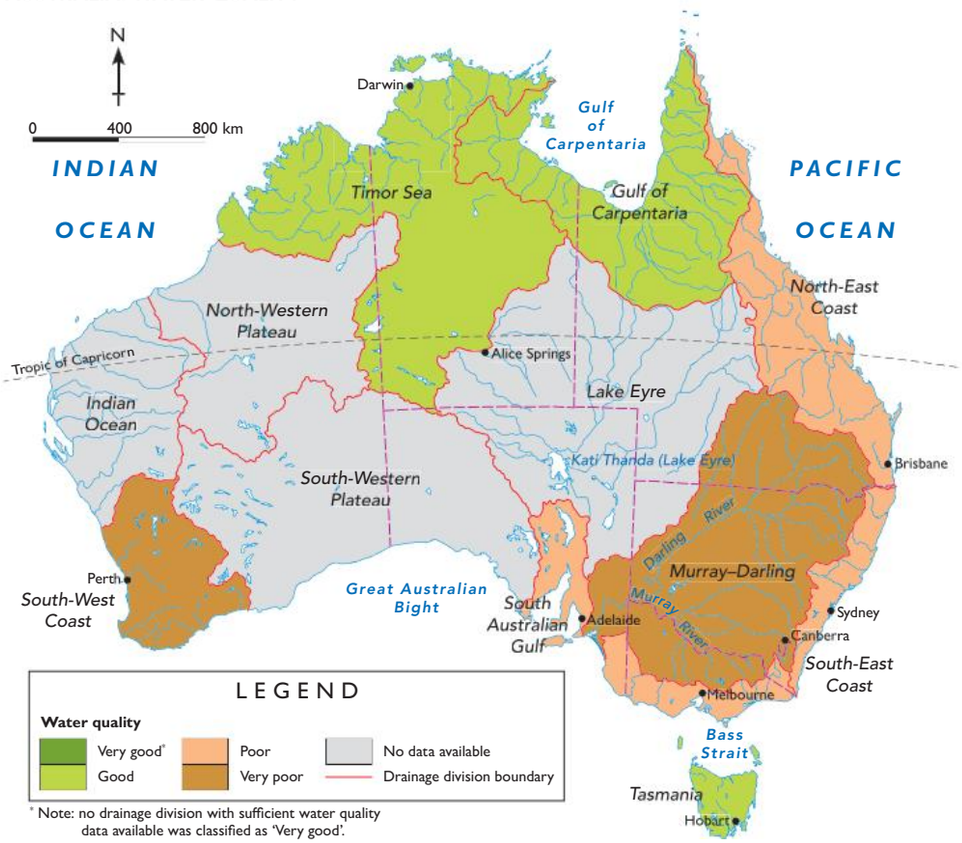
**WORLD: DEATHS CAUSED BY OUTDOOR AIR POLLUTION**




## Pollution in Australia

In comparison to other countries in the world, Australia has a relatively small pollution problem. However, major cities are increasingly experiencing smog caused by emissions from cars and industry; rivers, streams and underground water sources are becoming degraded due to the dumping of pollutants and overuse; and urban sprawl and the growing development of coastal areas have resulted in destruction of the natural environment and the production of more pollutants.

**AUSTRALIA: WATER QUALITY**




* Note: no drainage division with sufficient water quality data available was classified as 'Very good'.

▲ A high-level layer of warm air traps the smog over Sydney. This is known as a temperature inversion.

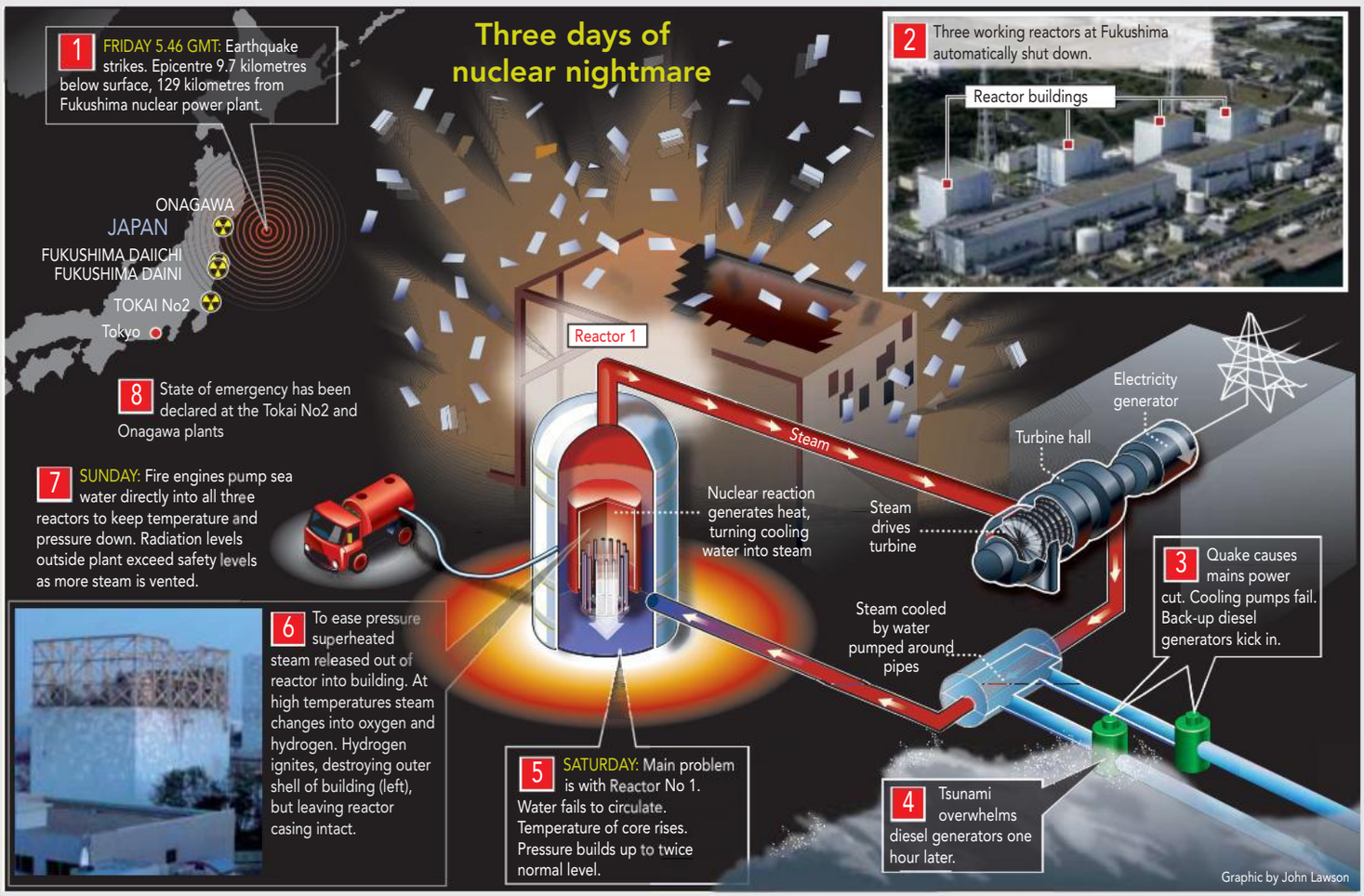
▲ The Great Barrier Reef is being threatened by coral bleaching caused by rising water temperatures and salinity levels. Both are the result of pollution.

▲ Hills surrounding Tasmania's Queenstown were stripped of vegetation to fuel smelters at the nearby copper mine. Toxic fumes from the smelters and acid rain have resulted in this barren landscape.

CASE STUDY

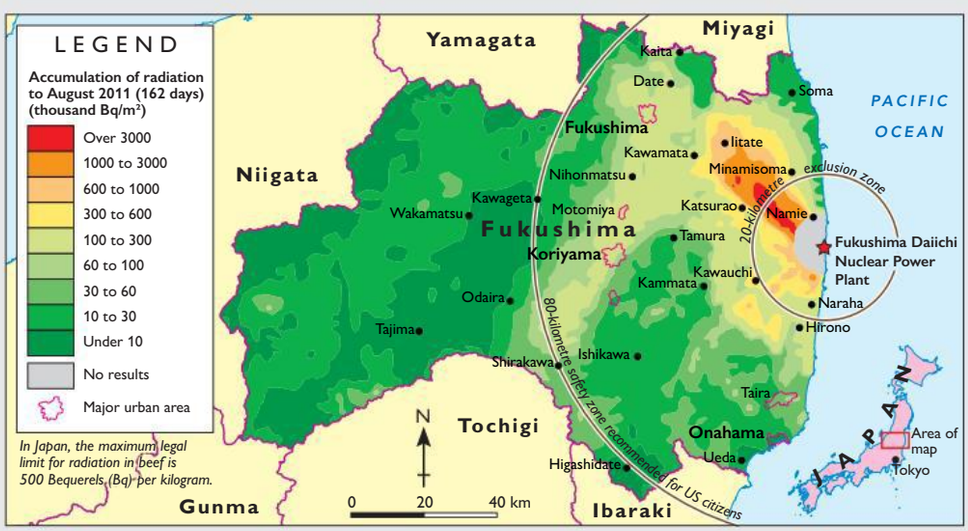
# Fukushima: Japan's worst nuclear disaster

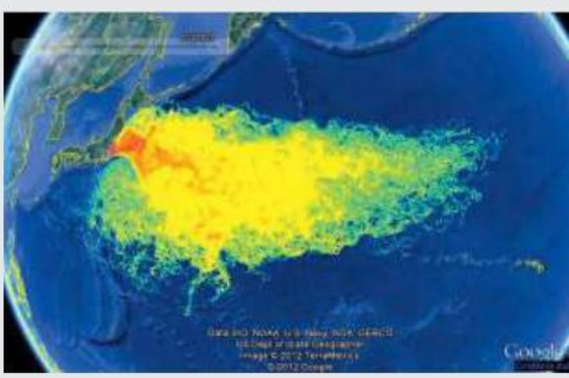
On 11 March 2011, a massive tsunami generated by a magnitude 9.0 earthquake hit the east coast of Japan. The tsunami inundated over 500 square kilometres of land, resulting in a death toll of over 19 000 people and widespread damage. Several nuclear power plants were struck by the earthquake and tsunami and most were successfully shut down. However, at the Fukushima Daiichi Nuclear Power Plant the earthquake and tsunami waves destroyed the electricity supply to the plant and the nuclear reactors could not be shut down or cooled. This resulted in a meltdown of one of four reactors and a release of radioactive gases into the atmosphere. Following the nuclear disaster, Japanese authorities set up a 20-kilometre exclusion zone around the power plant and over 100 000 people were relocated from their homes.




▲ The chain of events that occurred at Fukushima

## FUKUSHIMA PREFECTURE: LEVELS OF RADIATION



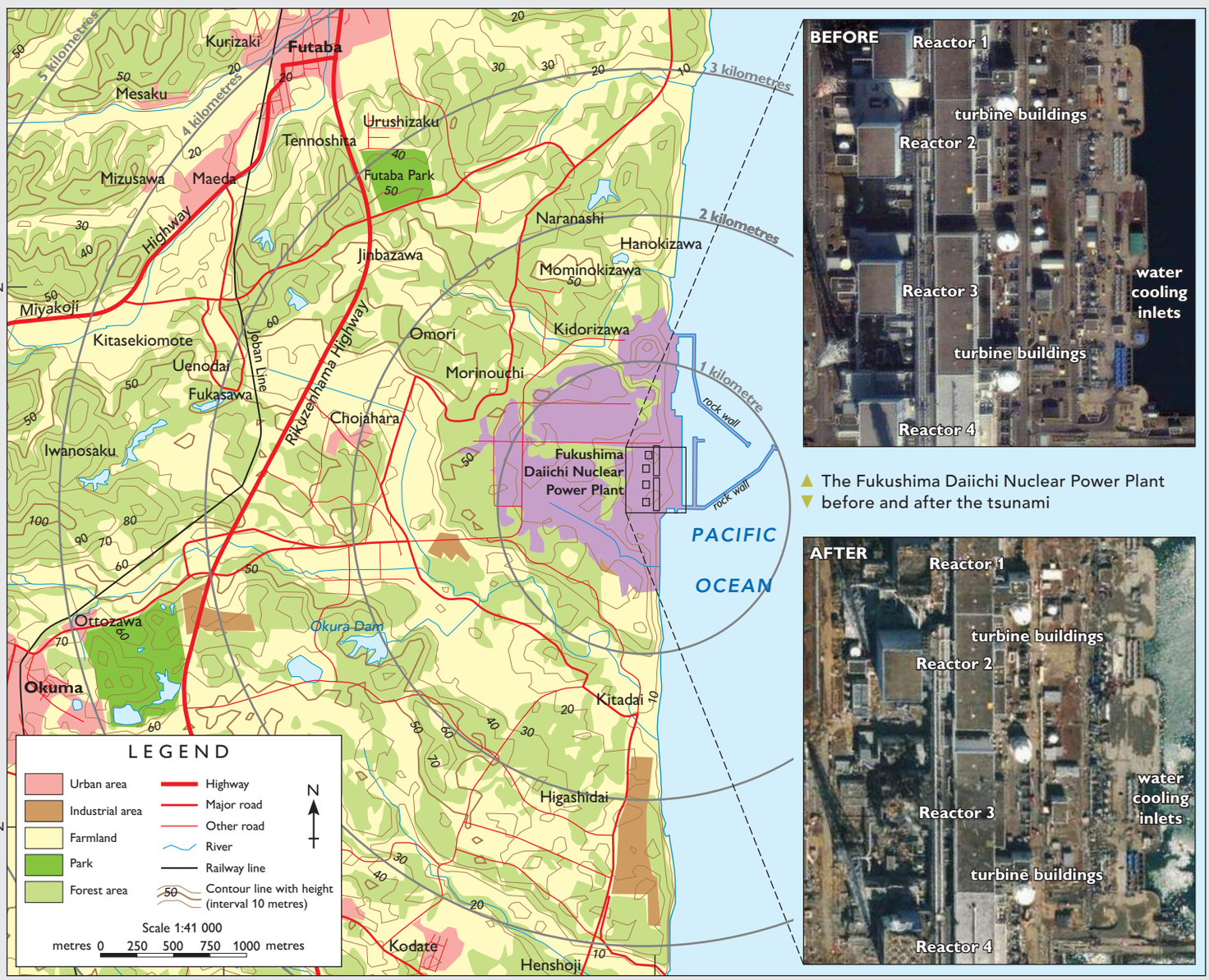



▲ Radioactive water was released into the Pacific Ocean immediately following the tsunami and water used to try and cool the reactors has leaked into the ocean for many months. This simulation model predicts the likely path taken by the radioactive water in the first year as ocean currents carry it eastward.

▲ Fifteen-metre tsunami waves pound the coast near Minamisoma in Fukushima prefecture.

▲ Namie, located just north of the power plant, was evacuated following the radiation threat from the nuclear accident. The 21 000 residents were only allowed to return home for a few hours at a time to minimise radiation exposure.

**FUKUSHIMA POWER PLANT AND SURROUNDS: TOPOGRAPHIC MAP**










▲ The Fukushima Daiichi Nuclear Power Plant
▼ before and after the tsunami

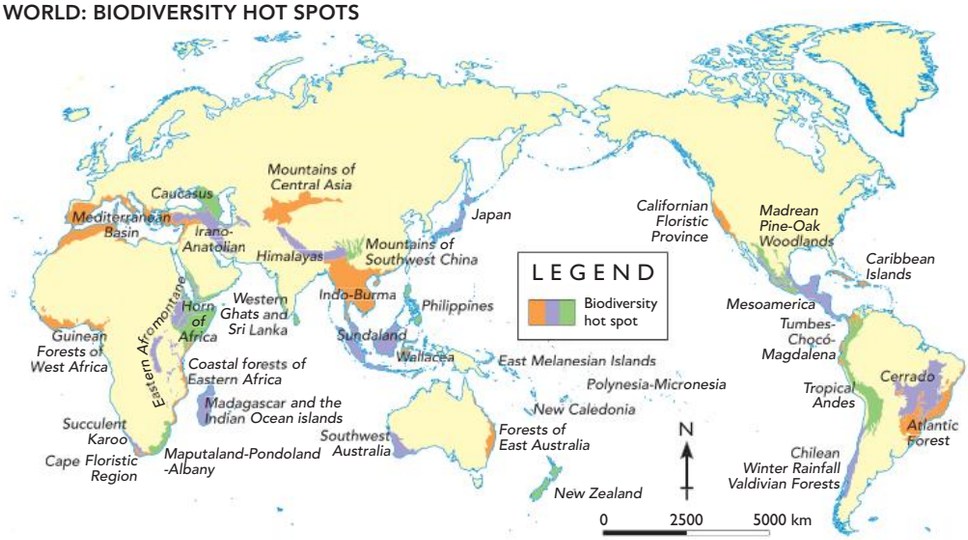
# Loss of biodiversity

The number of species of plants and animals on Earth is declining. This is largely due to human activities. The current rate at which species are becoming extinct is about 1000 times greater than would be expected without human impact. The main factors driving this reduction in biodiversity are habitat loss, invasive species, climate change, pollution and unsustainable use of resources.

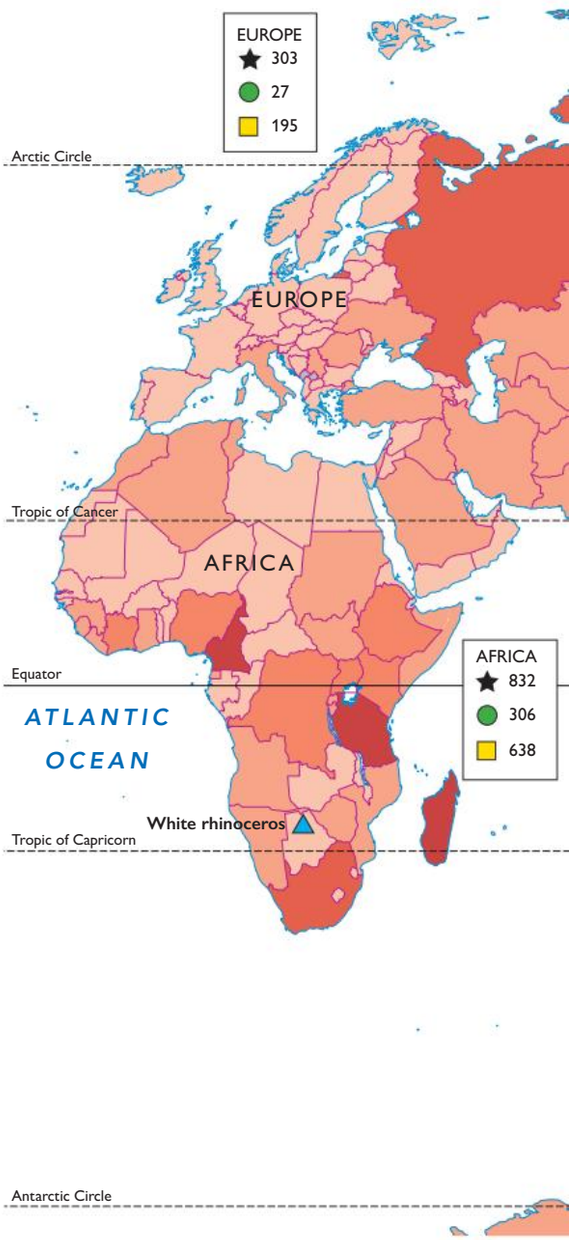
## Biodiversity hot spots

A few special places on Earth are home to much of the world's biodiversity. These places are called biodiversity hot spots. They contain over 50 per cent of the world's plant species and 42 per cent of all land-dwelling vertebrate animals. All 34 hot spots face extreme threats with most having already lost over 70 per cent of their natural vegetation.

**WORLD: BIODIVERSITY HOT SPOTS**




**WORLD: THREATENED SPECIES**




FAST FACTS

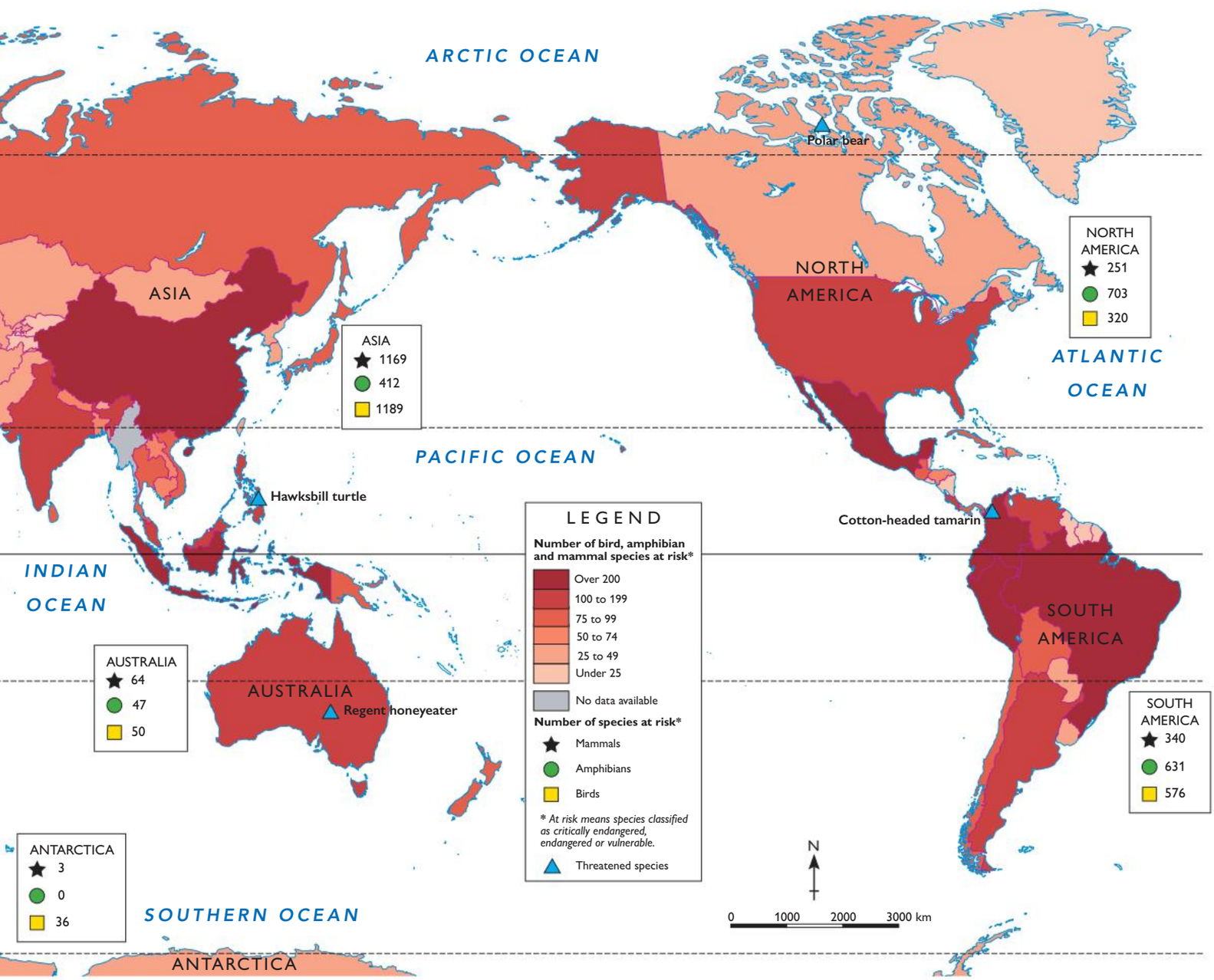
- **Extinct** – no doubt that the last individual of a species has died, e.g. great auk.
- **Extinct in the wild** – the only individuals of a particular species live in captivity, e.g. black-footed ferret.
- **Critically endangered** – a species facing an extremely high risk of extinction because of an extremely small population of adults or a rapid decrease in population size or habitat, e.g. cotton-headed tamarin.
- **Endangered** – species facing a very high risk of extinction because of a very small population or a rapid decrease in population size or habitat, e.g. Siberian tiger.
- **Vulnerable** – a species facing a high risk of extinction because of a small population or a rapid decrease in population size or habitat, e.g. polar bear.
- **Near threatened** – close to qualifying for one of the other status categories, e.g. white rhinoceros.
- **Least concern** – widespread and abundant, e.g. southern skua.

### Red List

Every year, the International Union of the Conservation of Nature (IUCN) produces their Red List of Threatened Species. The list categorises the degree of danger a species is facing.

▲ There are thought to be less than 500 regent honeyeaters in the wild. This makes them critically endangered. They face many threats, including competition from invasive species such as the noisy miner.

▲ The cotton-headed tamarin is a critically endangered species. Virtually its entire natural forest habitat in Colombia has been cleared for farming, resulting in widespread habitat loss.




▲ Critically endangered hawksbill turtles face many threats. These include pollution from oil spills and entanglement in fishing nets.

▲ The polar bear is considered to be vulnerable to extinction. This is partially due to climate change. Global warming is reducing the thickness and area of sea ice on which the bears hunt.

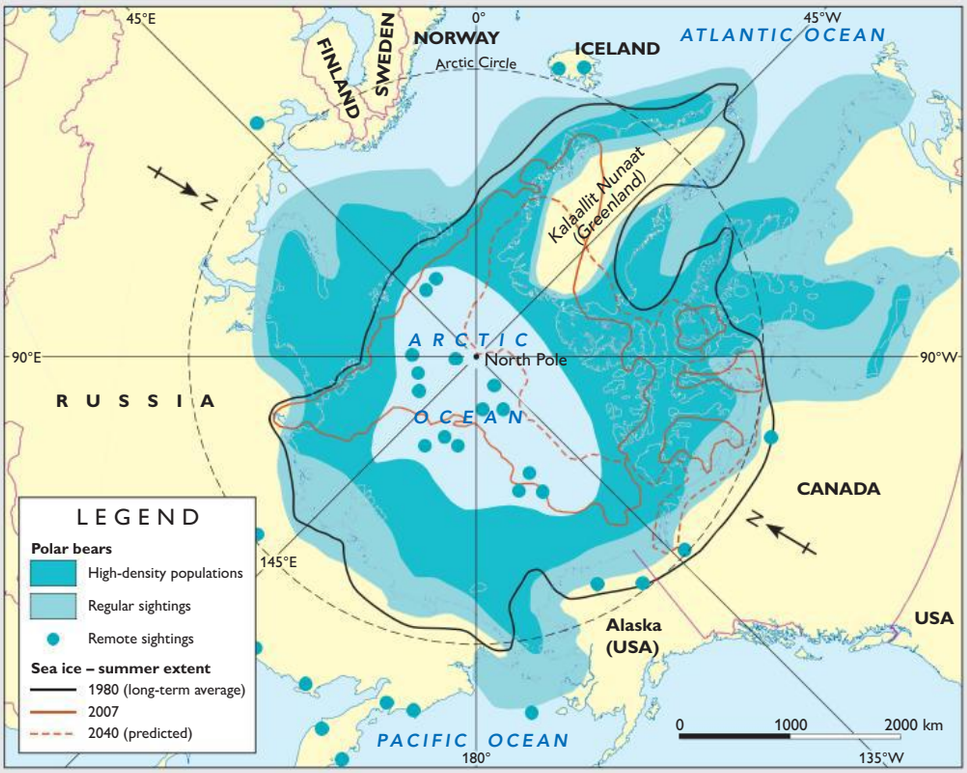
▲ Unsustainable harvesting of rhinoceros horns for use in traditional Asian medicine resulted in the near extinction of the white rhinoceros. Although numbers are slowly increasing, the species is still considered to be near threatened.

CASE STUDY

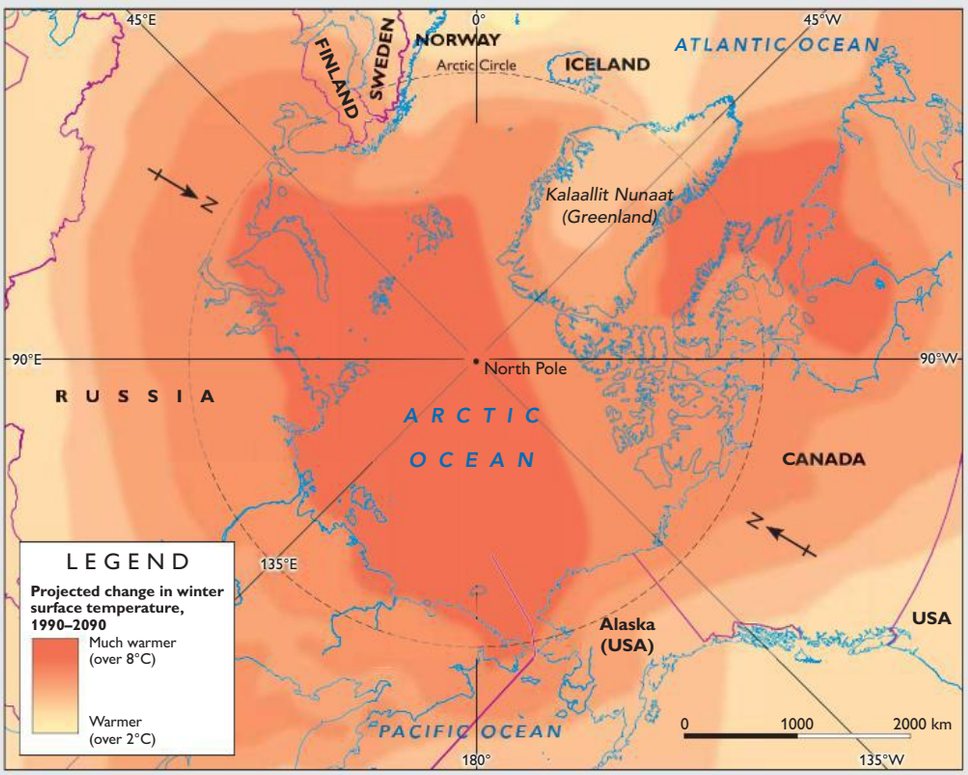
# Arctic Circle: Polar bears at risk

Since the 1970s, permanent sea ice in the Arctic Circle has reduced by 14 per cent. Polar bears rely on sea ice to hunt seals and move from place to place. Global warming (contributed to by the emission of greenhouse gases) has caused longer ice-free periods thereby shortening the seal-hunting season, particularly for those polar bears that live further south.

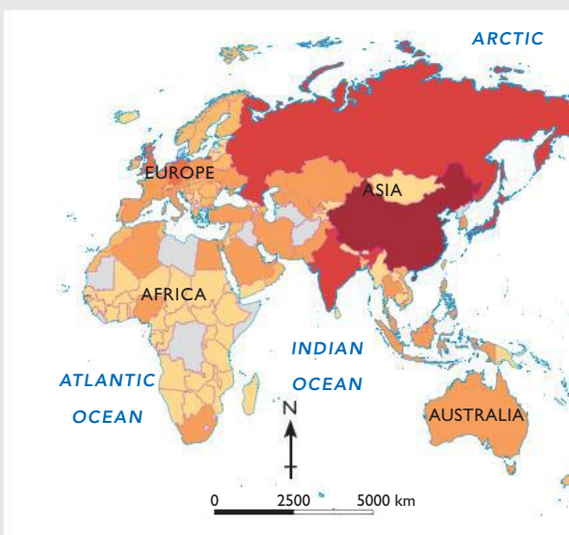
### ARCTIC CIRCLE: DISTRIBUTION OF POLAR BEARS



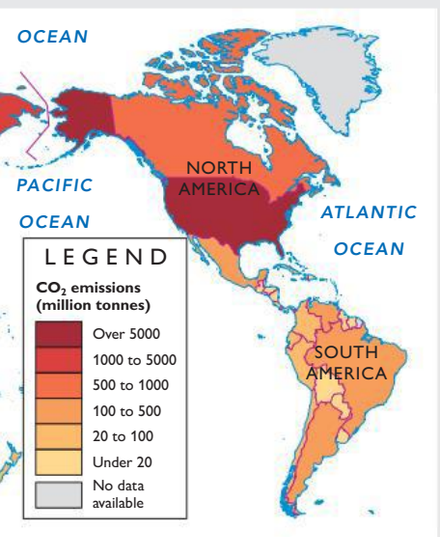

### ARCTIC CIRCLE: TEMPERATURE CHANGE



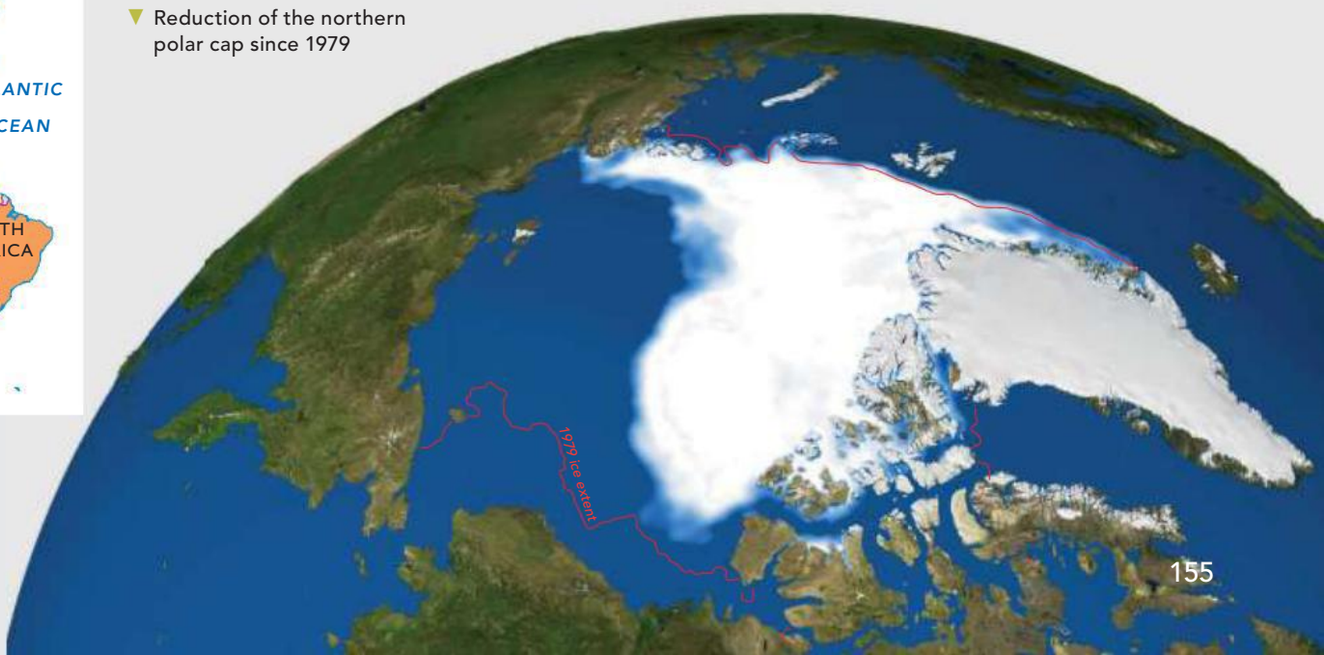

### WORLD: CARBON GREENHOUSE EMISSIONS



▲ Polar bear with a spring cub travelling over the sea ice near Barrow, Alaska. Scientists monitor the health of the polar bear population. For every week lost hunting seals, it is estimated that polar bears lose 10 kilograms of the fat reserves they require to stay healthy.




▼ Reduction of the northern polar cap since 1979



# Managing World Heritage sites

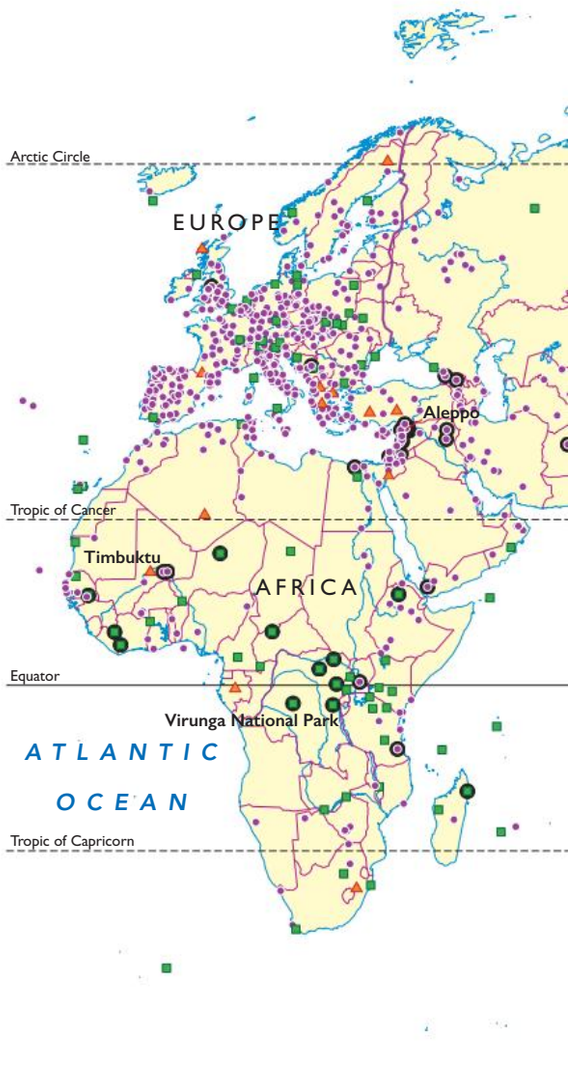
United Nations World Heritage listing is given to sites of outstanding value to humanity. In identifying and listing these sites, the United Nations aims to encourage governments to protect and preserve that heritage. The United Nations also identifies World Heritage sites that are considered to be in danger (currently 44 properties). Natural disasters, war, pollution, poaching, urban sprawl and tourism can all pose threats to World Heritage sites. Sites considered to be in danger are eligible for emergency assistance from the United Nations to help protect and better manage them.

▲ The Everglades (United States) contains one of the world's largest mangrove ecosystems and is the most significant breeding ground for wading birds in North America. The site is in danger because water used for farming has reduced the overall amount of water in the ecosystem, leading to a loss of habitat and biodiversity.

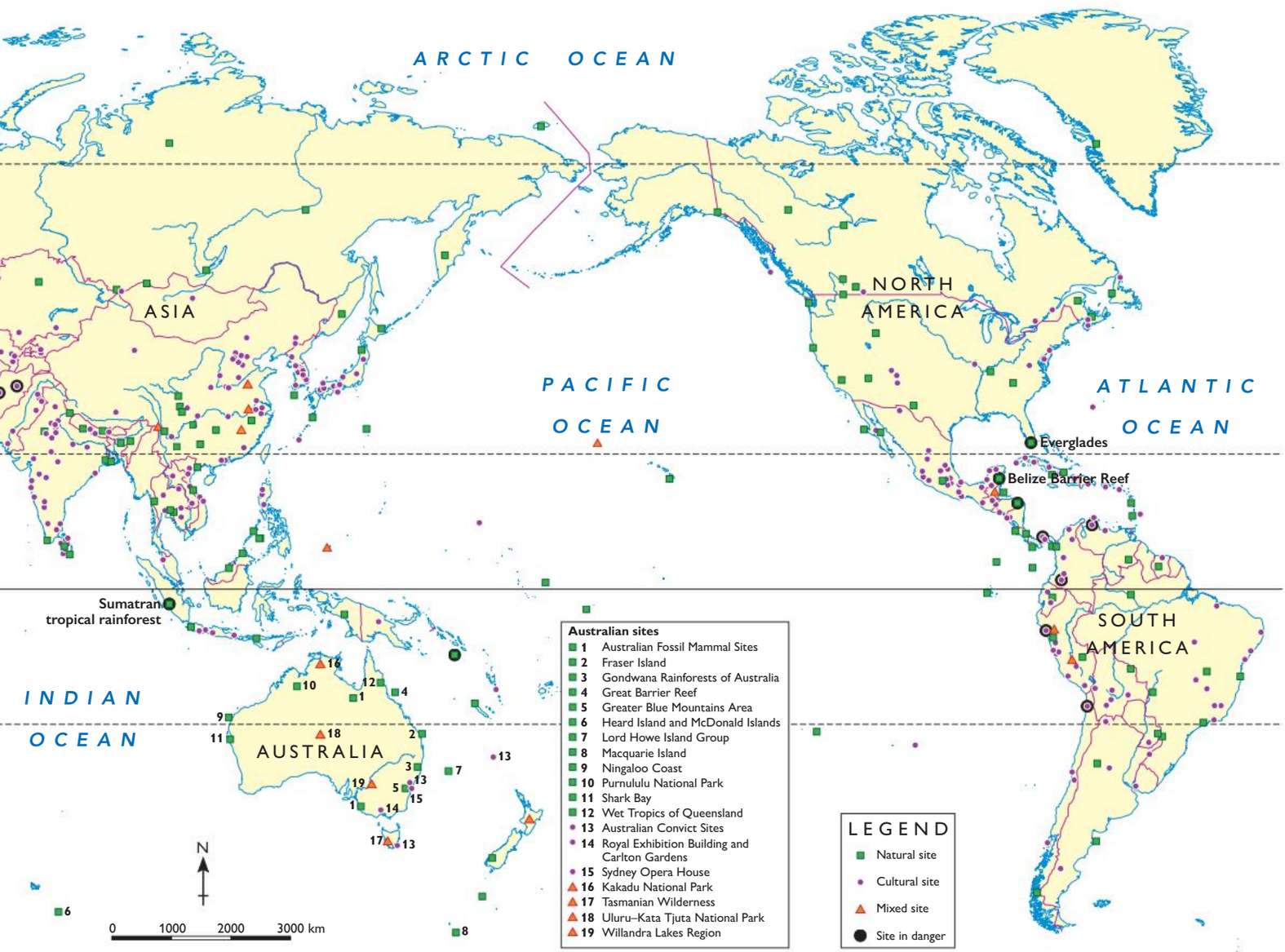
▲ The buildings of the ancient city of Aleppo (Syria) show evidence of occupation by waves of cultures over thousands of years. All six Syrian World Heritage sites were listed as being in danger in 2013 because of the ongoing and widespread civil war in the country.

▲ The earthen mosques of Timbuktu (Mali) show that this city was once one of the world's great spiritual, intellectual, commercial and cultural centres. Many of the sites have fallen into disrepair due to a lack of proper management and maintenance. In some cases, valuable cultural objects have been stolen from the sites.

**WORLD: WORLD HERITAGE SITES**




▲ Listed due to its rich biodiversity, the Sumatran tropical rainforest is threatened by road construction, clearing for farming, illegal logging and poaching.




▲ The Belize Barrier Reef is the northern hemisphere's largest coral reef and an important habitat for threatened species, including marine turtles and crocodiles. Cutting of mangroves and excessive development for tourists are endangering the reef ecosystem.

▲ Home to the endangered mountain gorilla, Virunga National Park (Democratic Republic of Congo) comprises an outstanding diversity of habitats. An influx of up to one million refugees following wars in the region has led to widespread deforestation due to fuel wood requirements.

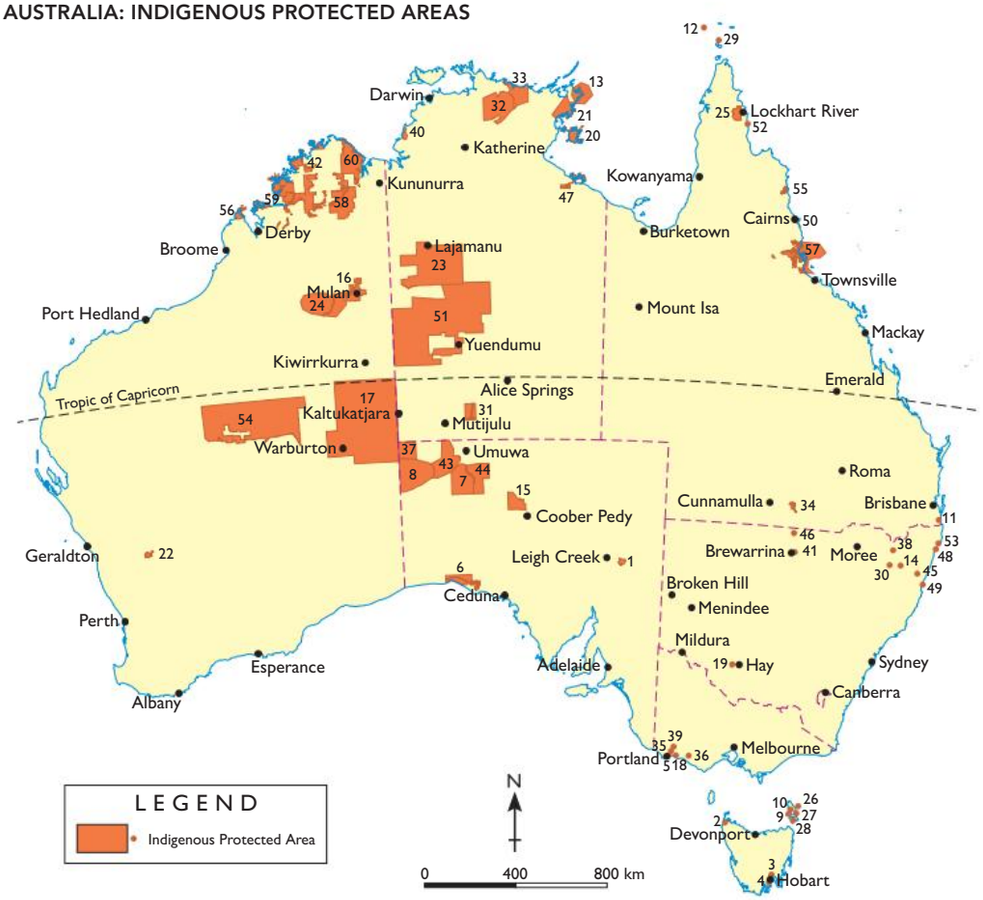
# Indigenous environmental management

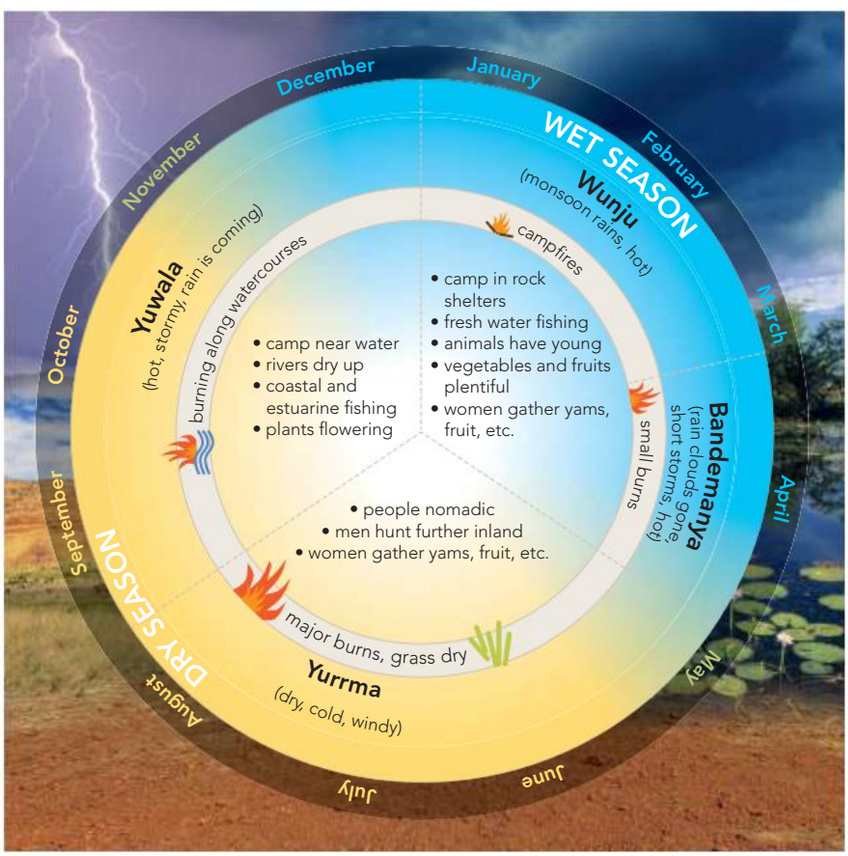
The close interconnections between Indigenous Australians and the land are increasingly appreciated in environmental management. Indigenous Protected Areas are areas of Indigenous-owned land or sea where the traditional owners manage and protect the plants, animals and cultural sites of their area. There are 60 Indigenous Protected Areas covering around 480 000 square kilometres across Australia.

## Uunguu Indigenous Protected Area

The Uunguu (meaning 'living home') Indigenous Protected Area covers 3500 square kilometres of the Kimberley region of north-western Australia (see site 42 on the map). It is the first major stage in the Wunambal Gaambera Healthy Country Plan, a collaborative management plan between the Wunambal Gaambera people (the traditional owners of the land), Bush Heritage Australia and the Kimberley Land Council. It aims to help rangers manage fire, weed and feral animal control, tourism, cultural heritage conservation and the health of plants and animals. Management techniques incorporate both traditional knowledge and modern science.

**AUSTRALIA: INDIGENOUS PROTECTED AREAS**




A seasonal calendar based on traditional knowledge from the Wunambal Gaambera people is used to plan the best time of the year for a 'right-way fire' – controlled burning at cooler times to stop wildfires in the hot season. The calendar shows the interconnections between natural and cultural aspects of the environment, and the importance of traditional Indigenous management of land and water.

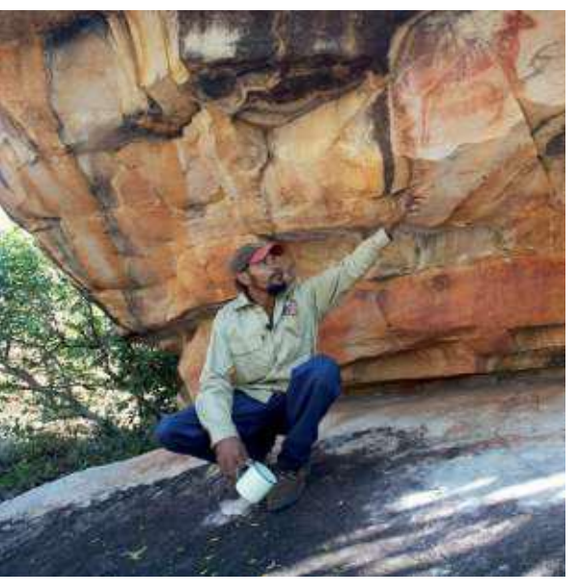
The Uunguu Indigenous Protected Area (42) in the northern Kimberley has one of the most remote coastlines in the world.

**Indigenous Protected Area**

1 Nantawarrina
2 Preminghana
3 Risdon Cove
4 Putalina
5 Deen Maar
6 Yalata
7 Watarru
8 Walalkara
9 Mount Chappell Island
10 Badger Island
11 Guanaba
12 Warul Kawa Island
13 Dhimurru
14 Wattleridge
15 Mount Willoughby
16 Paruku
17 Ngaanyatjarra
18 Tyrendarra
19 Toogimbie
20 Anindilyakwa
21 Laynhapuy – Stage 1
22 Ninghan
23 Northern Tanami
24 Warlu Jilajaa Jumu
25 Kaanju Ngaachi
26 Babel Island
27 Great Dog Island
28 Iungatalanana
29 Pulu Islet
30 Tarriwa Kurrukun
31 Angas Downs
32 Warddeken
33 Djelk
34 Jamba Dhandan Duringala
35 Kurtonitj
36 Framlingham Forest
37 Kalka – Pipalyatjara
38 Boorabee and The Willows
39 Lake Condah
40 Marri-Jabin (Thamarrurr – Stage 1)
41 Brewarrina Ngemba Billabong
42 Uunguu – Stage 1
43 Apara – Makiri – Punti
44 Antara – Sandy Bore
45 Dorodong
46 Weilmoringle
47 Yanyuwa (Barni – Wardimantha Awa
48 Minyumai
49 Gumma
50 Mandingalbay Yidinji
51 Southern Tanami
52 Angkum – Stage 1
53 Ngunya Jargoon
54 Birriliburu
55 Eastern Kuku Yalanji
56 Bardi Jawi
57 Girringun (CM)
58 Wilinggin
59 Dambimangari
60 Balanggarra

## Southern Tanami Indigenous Protected Area

Covering an area of over 100 000 square kilometres, the Southern Tanami Indigenous Protected Area (site 51 on the map) is the largest protected area in Australia. The Southern Tanami has several groups of traditional owners who are mostly Walpiri people. Traditional owners and the Central Land Council have developed a management plan to guide Walpiri rangers in protecting the natural and cultural sites of the area. This plan encourages rangers to use the knowledge of Aboriginal elders combined with technology such as helicopters and satellite imagery to manage their land. Walpiri rangers and traditional owners also teach younger generations about environmental management, including sustainably harvesting wildlife and burning country.

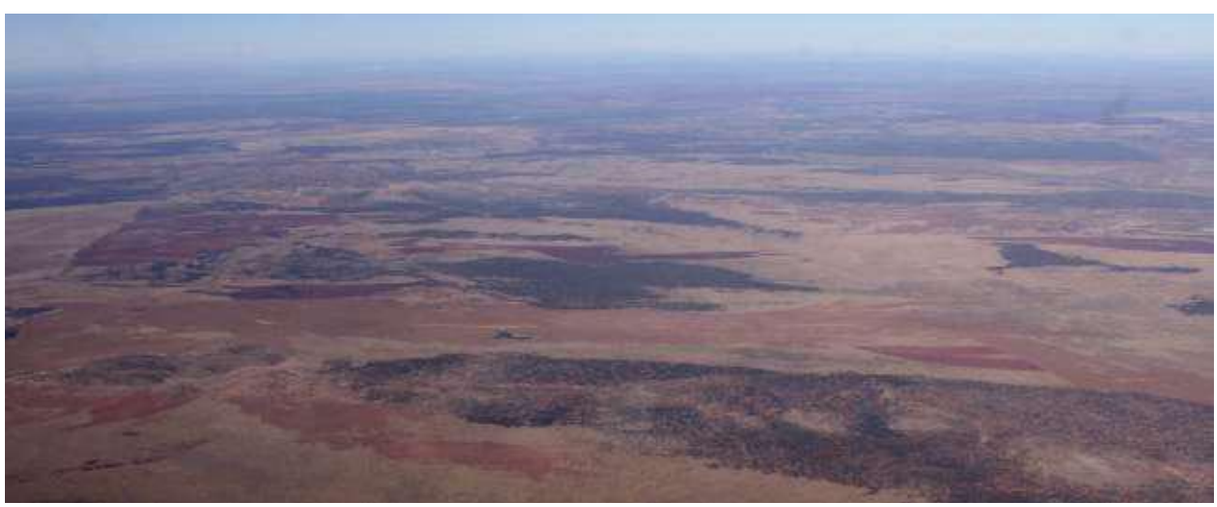


▲ A Wunambal Gaambera ranger studying one of the many rock art sites in the area.

▲ A ranger sets a firebreak to reduce wildfires and to improve the health of the land.

◀ A Walpiri ranger in the field

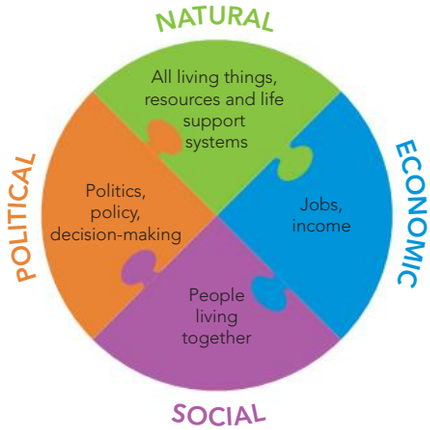
▼ The Southern Tanami Indigenous Protected Area (51) includes much of the Tanami and Great Sandy deserts. It covers an area 1.3 times larger than Tasmania.



# Sustainability

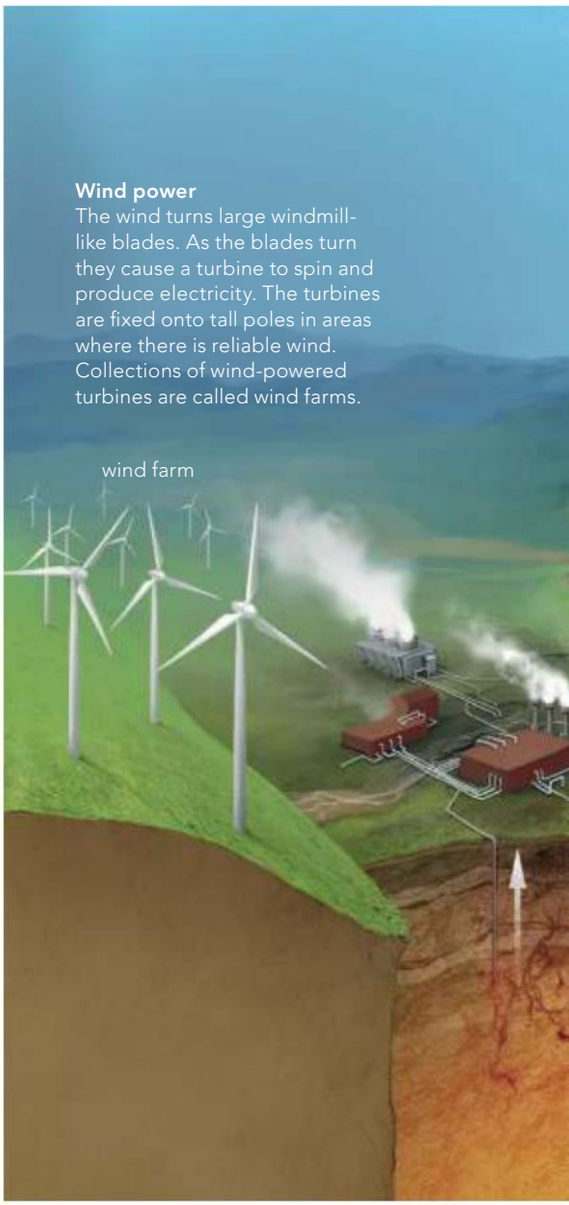
Sustainability is the capacity of the Earth to support all forms of life, both now and into the future. It refers to the ability of economic development to take place without damage to the environment or depletion of resources. To live more sustainably, we need to address the consequences of our human footprint on Earth and create a more balanced approach to the way humans intereact with the environment and with each other.

Using human–environment systems thinking we can view all aspects of life and the capacity of the Earth to maintain those aspects. For example, the uncontrolled collection of firewood in developing countries can lead to deforestation and erosion. An understanding of the importance of wood collection for income and families is important when formulating policies to make timber usage more sustainable.



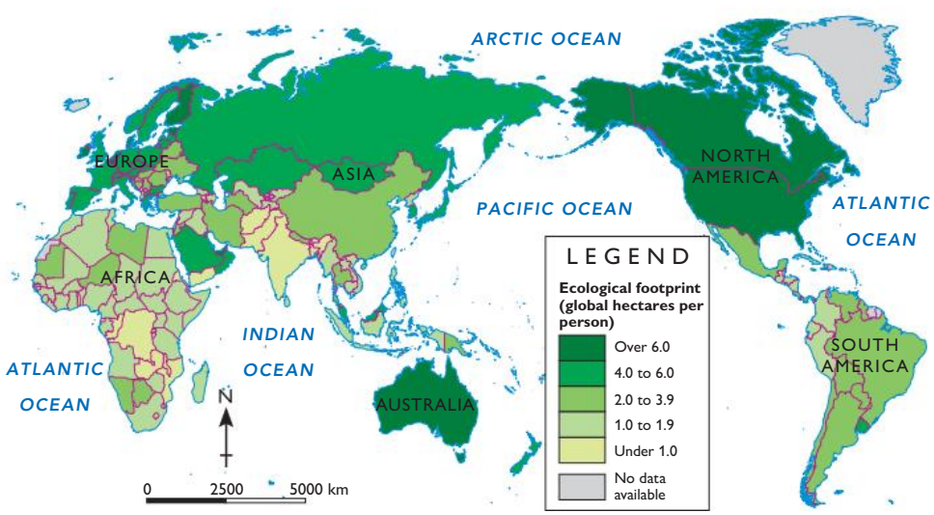

▲ Human–environment systems thinking requires us to think how the different systems that operate on Earth can best work together to provide more sustainable ways of living.

◀ These Ethiopian girls complete an eight-hour journey in search of wood. They make this trip two or three times a week. More than 95 per cent of Ethiopia is now deforested, yet most of its population requires wood for light, heating and cooking. Aid organisations are working with local communities to experiment with inexpensive, clean-burning stoves that use alcohol fuels and help reduce reliance on timber.



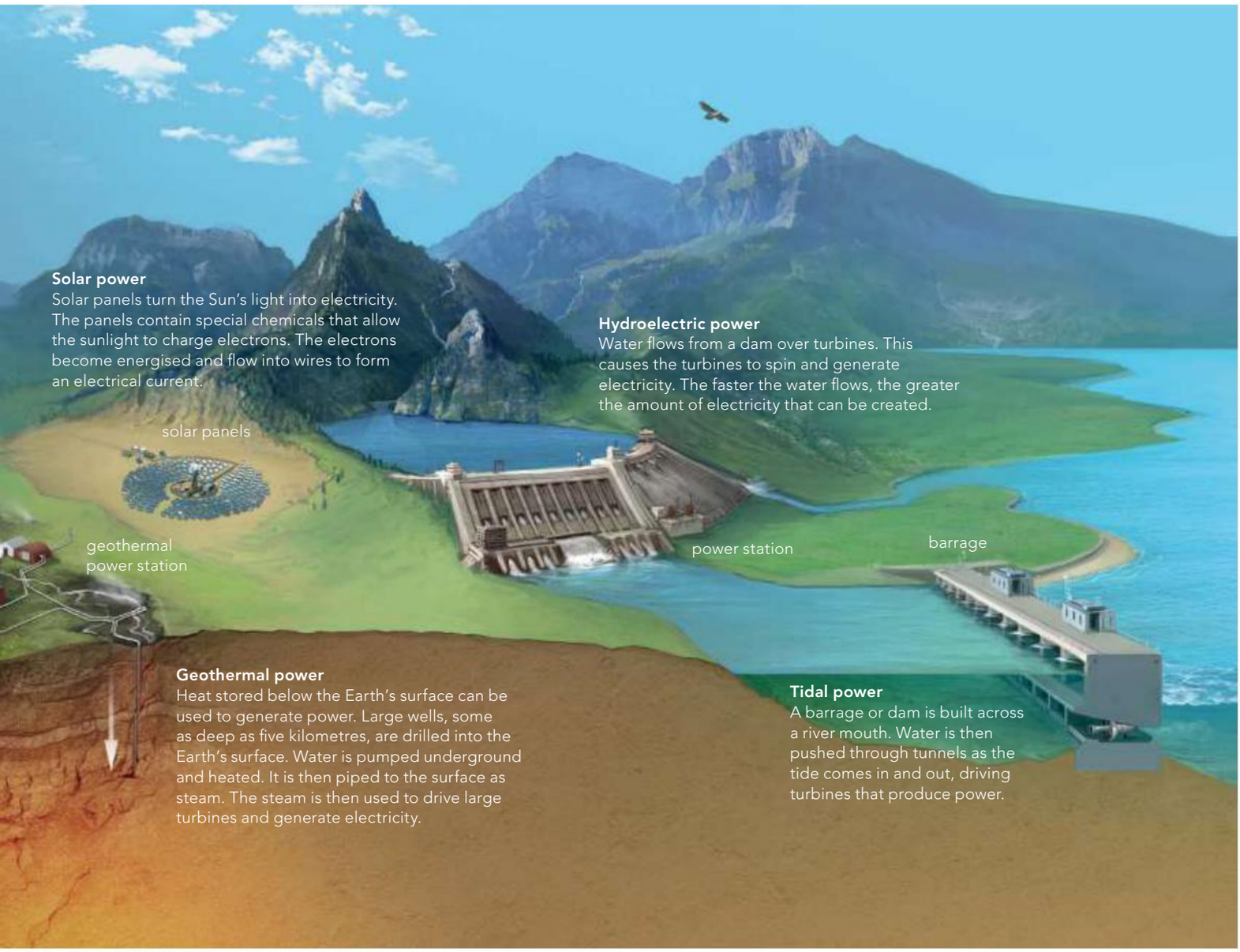

**Wind power**
The wind turns large windmill-like blades. As the blades turn they cause a turbine to spin and produce electricity. The turbines are fixed onto tall poles in areas where there is reliable wind. Collections of wind-powered turbines are called wind farms.

**WORLD: ECOLOGICAL FOOTPRINT**

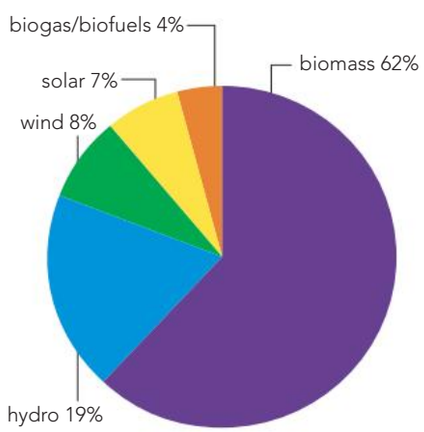



## Renewable energy

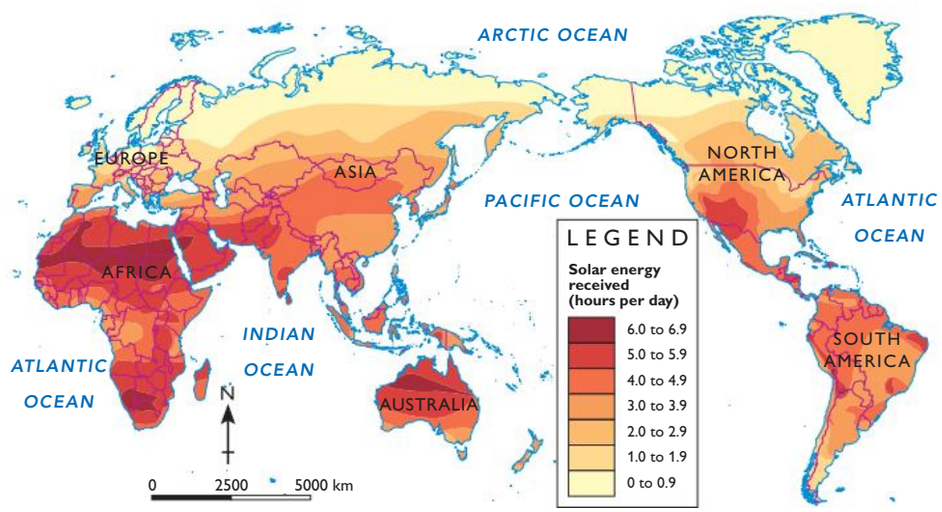
Renewable energy is energy that is generated from resources that are continually replaced. Approximately seven per cent of the world's energy comes from renewable resources such as the Sun, the wind, the ocean's tides, running water and heat stored beneath the Earth's surface. Non-renewable energy is energy that is generated from resources that cannot be replaced or can only be replaced at a very slow rate. Uranium and fossil fuels, such as coal, oil and natural gas, have taken millions of years to form. Most of the world's non-renewable energy resources are expected to run out within the next 50 to 200 years.




**AUSTRALIA: RENEWABLE ENERGY**




**WORLD: SOLAR ENERGY POTENTIAL**



# Human wellbeing

Wellbeing is the ability of people to access the things they need in order to live happy, healthy and contented lives. People's basic requirements for life are the same no matter where they live. These include fresh water, a secure food supply, shelter, clothing and safety. Once these primary needs are met, secondary needs such as good health, the ability to make a living and access to education become important in determining wellbeing.

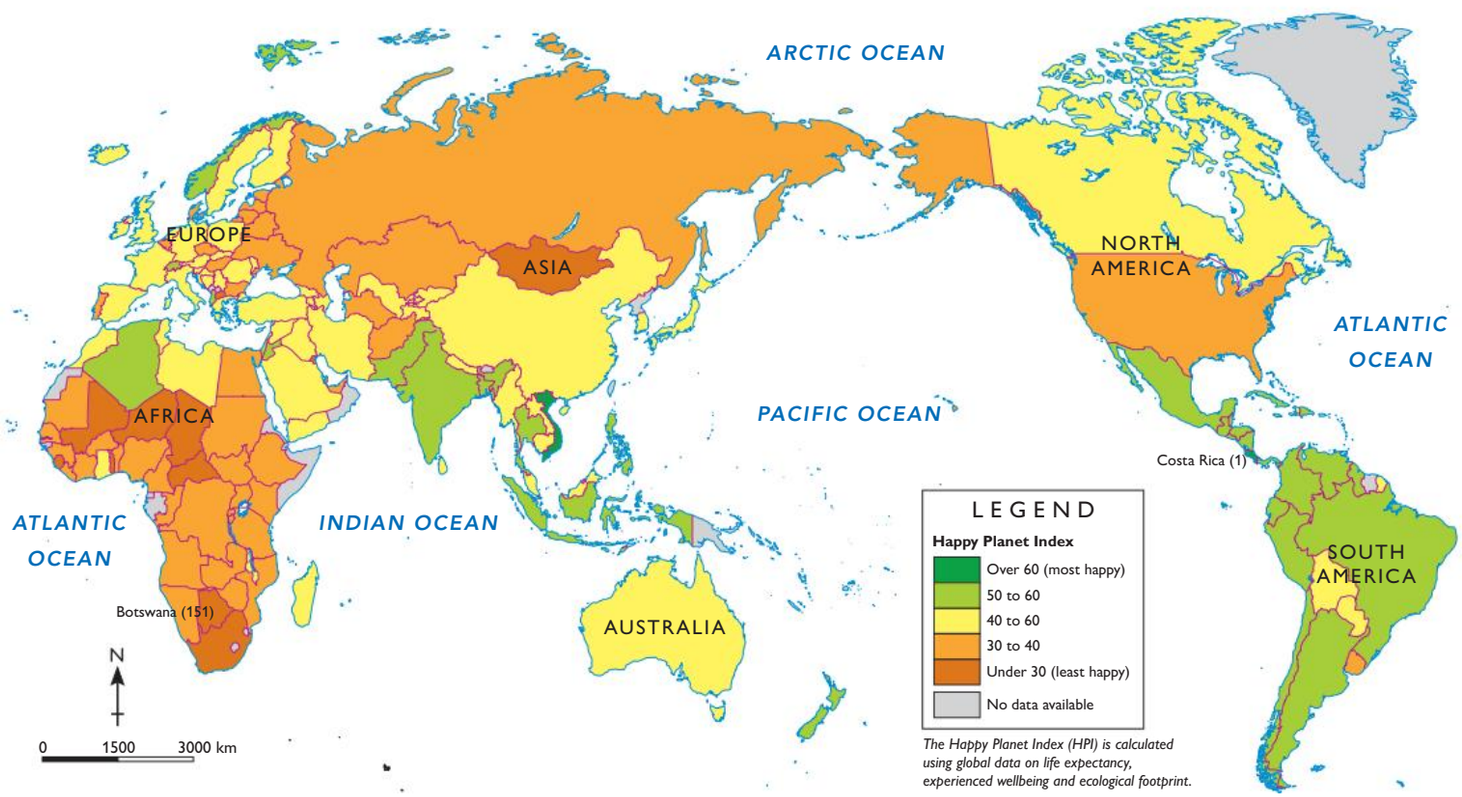
## Measuring wellbeing

Human wellbeing has traditionally been measured in terms of wealth. Gross Domestic Product (GDP) measures the value of all of the goods and services within a country. Economically wealthy countries such as Australia, the United States, Canada and France are ranked highly in terms of GDP. These countries also score highly in measures of health care (such as life expectancy) and education (such as literacy).

New measures of wellbeing take into account the sustainability and environmental health of countries. The Happy Planet Index (HPI) aims to show those countries that produce long, happy and sustainable lives for their population. Costa Rica, Vietnam and Colombia stand out as the world's happiest nations, despite not being able to compete with other nations in terms of economic wealth. The United States performs poorly in the HPI index. Americans live long lives, but they are the largest consumers on the planet and have a huge ecological footprint.

▲ Costa Ricans are the happiest people on the planet. They live long lives and produce just one-third of the ecological footprint of the United States. Nine of the 10 happiest countries are in Central and South America.

**WORLD: HAPPY PLANET INDEX**

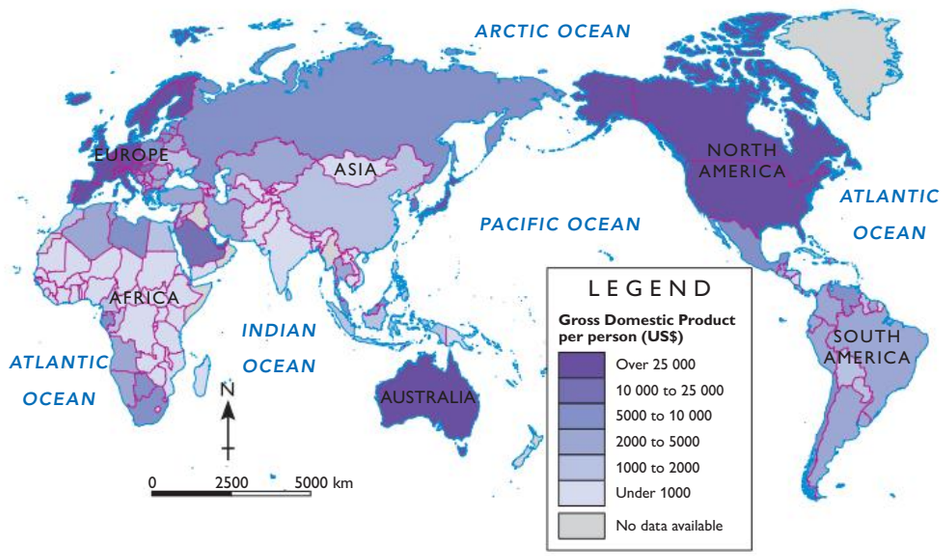


▲ Chad in northern-central Africa scored the second lowest HPI of any country in the world. This reflects a low life expectancy, low levels of experienced wellbeing and a moderately high ecological footprint.

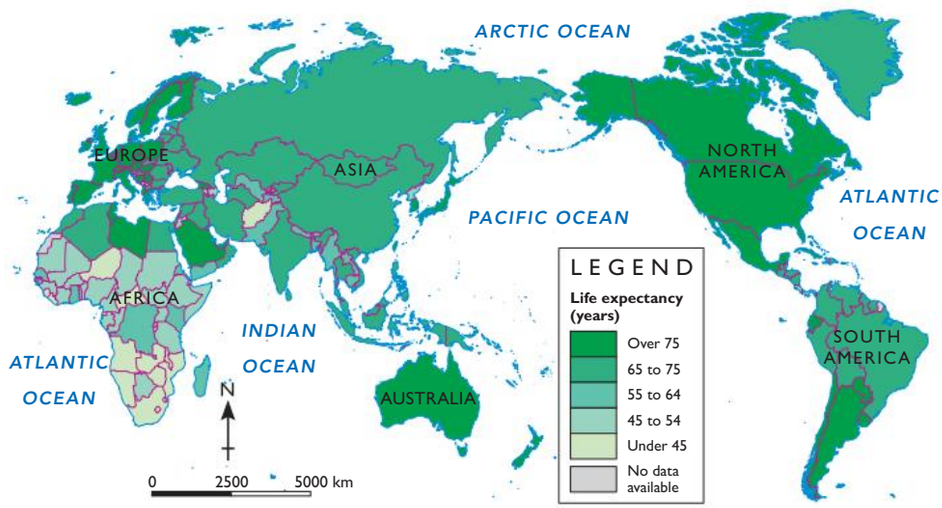
**WORLD: HAPPY PLANET INDEX RANKINGS**

| RANK | COUNTRY | HPI |
|---|---|---|
| | Top 10 countries | |
| 1 | Costa Rica | 64.0 |
| 2 | Vietnam | 60.4 |
| 3 | Colombia | 59.8 |
| 4 | Belize | 59.3 |
| 5 | El Salvador | 58.9 |
| 6 | Jamaica | 58.5 |
| 7 | Panama | 57.8 |
| 8 | Nicaragua | 57.1 |
| 9 | Venezuela | 56.9 |
| 10 | Guatemala | 56.9 |
| | Bottom 10 countries | |
| 142 | South Africa | 28.2 |
| 143 | Kuwait | 27.1 |
| 144 | Niger | 26.8 |
| 145 | Mongolia | 26.8 |
| 146 | Bahrain | 26.6 |
| 147 | Mali | 26.0 |
| 148 | Central African Republic | 25.3 |
| 149 | Qatar | 25.2 |
| 150 | Chad | 24.7 |
| 151 | Botswana | 22.6 |

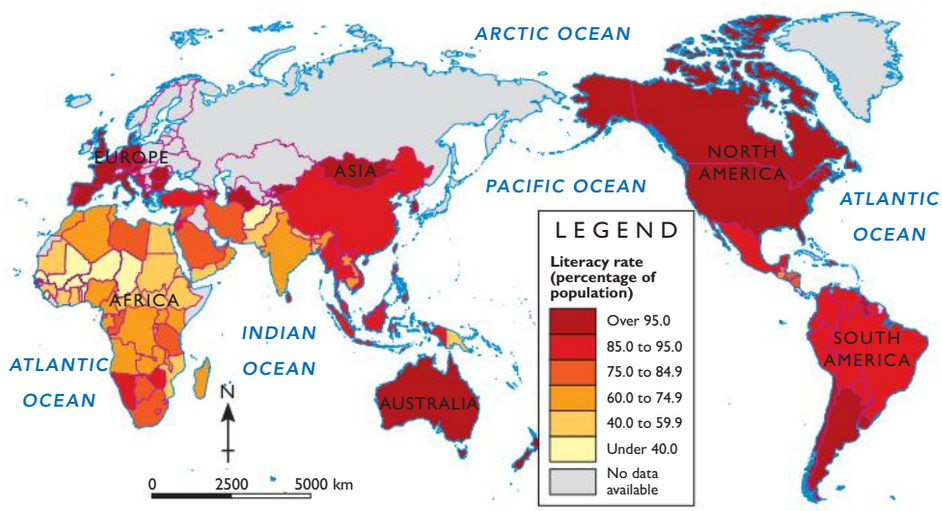
**WORLD: GROSS DOMESTIC PRODUCT**




**WORLD: LIFE EXPECTANCY**




**WORLD: LITERACY RATE**



CASE STUDY

# India: Contrasts in wellbeing

India is a country of contrasts in human wellbeing. With the world's fourth largest economy and the second largest workforce, India is also home to more people living in poverty than any other nation. The country's wealth is concentrated in its booming cities, while the majority of those experiencing poverty live in rural areas. Rural poverty rates are highest among ethnic minorities and in areas where disasters such as droughts and floods are constant threats to food production. In some places land degradation further threatens wellbeing.

INDIA: HUMAN DEVELOPMENT INDEX


INDIA: MAJOR ENVIRONMENTAL CONSTRAINTS


INDIA: POVERTY RATES, 1993 TO 1994


INDIA: POVERTY RATES, 2009 TO 2010

INDIA: NATURAL HAZARDS


▲ Of the world's 10 fastest growing cities, three are in India. Ghaziabad, part of the region of Delhi, is the fastest growing city in India. Millions of India's rural dwellers are relocating to cities to seek a better, more prosperous future. These cities are struggling to provide adequate services such as transport, water and sanitation to their new residents.

INDIA: POPULATION CHANGE

| | 1997 | 2012 |
|---|---|---|
| Total population (millions) | 1000 | 1258 |
| Percentage of population in rural areas | 72.98 | 69.36 |

INDIA: POVERTY RATES

| | 1993 to 1994 | 2009 to 2010 |
|---|---|---|
| Percentage of rural population living in poverty | 37.3 | 33.8 |
| Percentage of urban population living in poverty | 32.4 | 20.9 |
| Percentage of total population living in poverty | 36.0 | 29.8 |

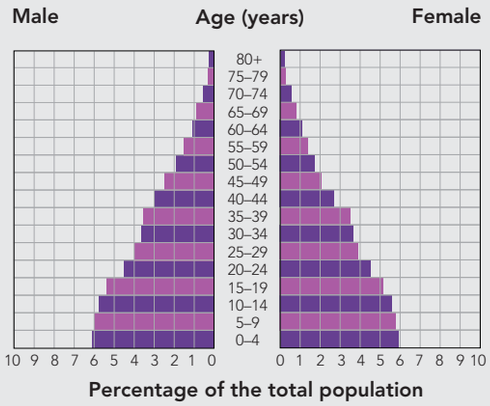
▲ Although India is becoming increasingly urbanised, most Indians still live in rural areas. In many of these regions, water scarcity is a serious issue, particularly in years when the monsoon rains arrive late. Here, people gather to get water from a huge well in a village in the western Indian state of Gujarat.

CASE STUDY

# Papua New Guinea: Contrasts in wellbeing

Papua New Guinea is Australia's closest neighbour. Even though the two countries are linked historically, economically and culturally, they are very different. Whereas levels of wellbeing in Australia are among the world's highest, those in Papua New Guinea are among the lowest. There are also many variations in wellbeing on a regional scale in the country.

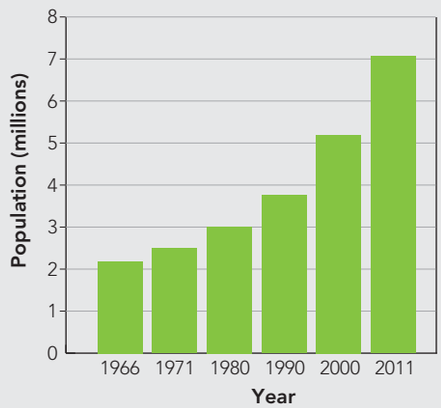
### PAPUA NEW GUINEA: POPULATION PYRAMID



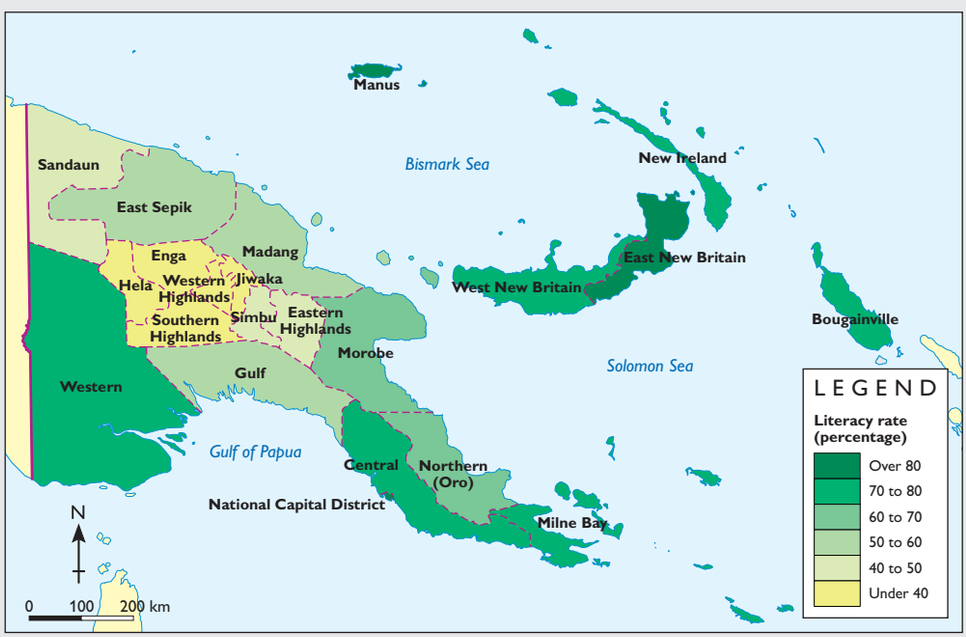

▼ The interior of Papua New Guinea is mountainous and covered in dense rainforest. In these regions, people live in small villages connected by walking tracks. This makes access to medical aid and schools very difficult as some people live many days walk from the nearest large town.

Much of Papua New Guinea's wealth is ► concentrated in its capital, Port Moresby, which is rapidly expanding and developing. However, with high levels of crime and corruption it is rated as one of the world's most dangerous and least liveable cities.

### PAPUA NEW GUINEA: POPULATION GROWTH

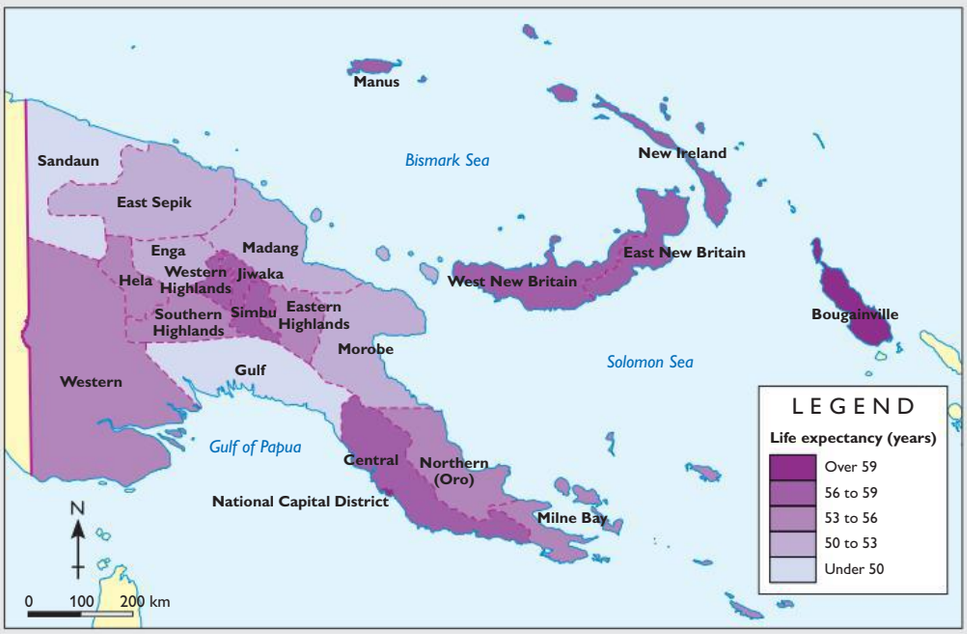



### PAPUA NEW GUINEA: LITERACY RATE




### PAPUA NEW GUINEA: INFANT MORTALITY RATE

PAPUA NEW GUINEA: LIFE EXPECTANCY

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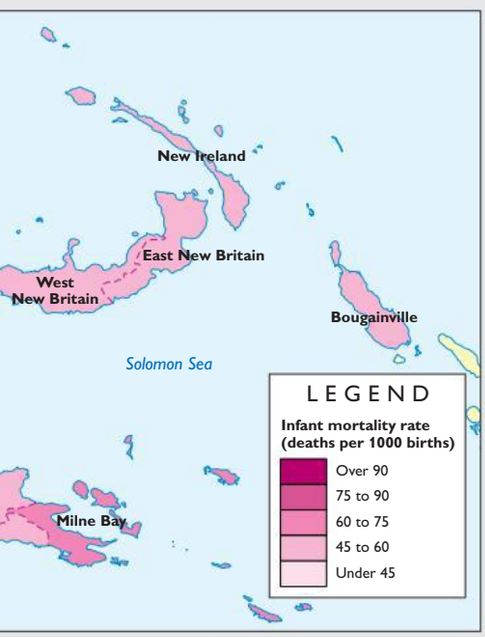
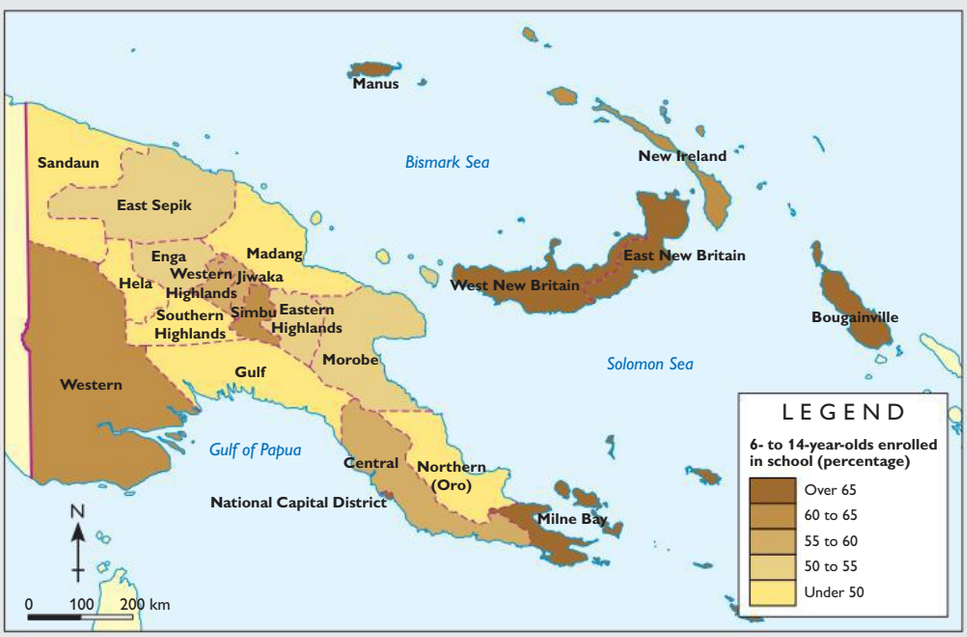


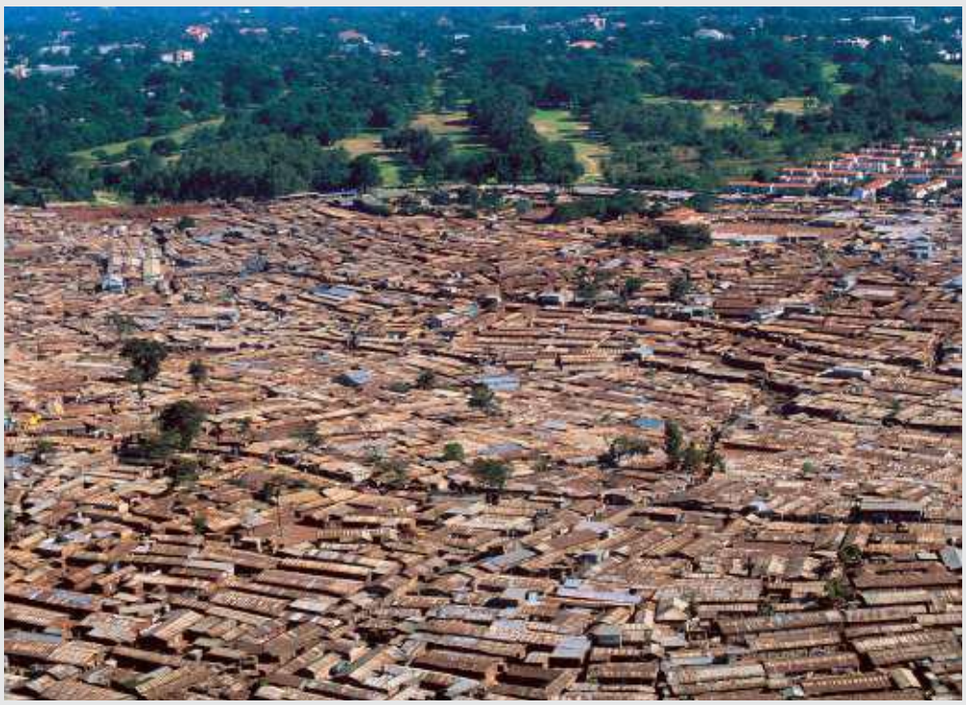

PAPUA NEW GUINEA: PRIMARY SCHOOL ENROLMENT



CASE STUDY

# Kibera: Wellbeing in Africa's largest slum

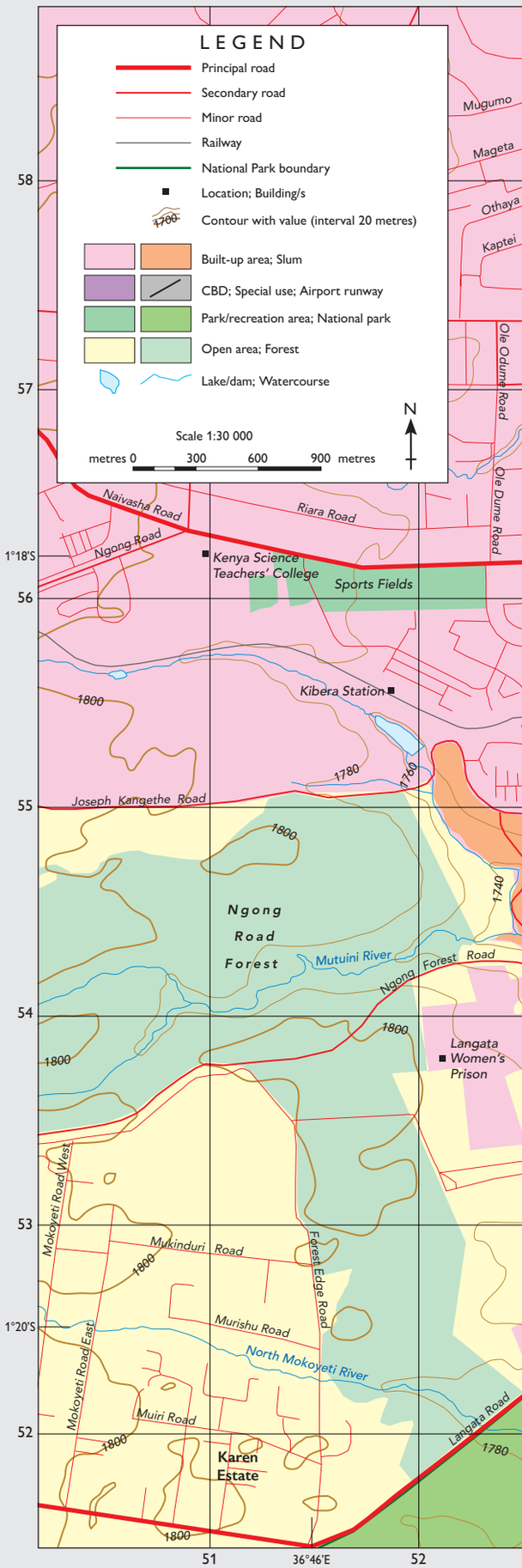
Kibera in Nairobi, Kenya (GR543547), is the largest slum in Africa and one of the largest in the world. Almost one million people, or more than a quarter of Nairobi's population, live in this shantytown. With a population density of 300 000 people per square kilometre, Kibera in one of the most densely populated places on Earth. There is no clean running water and only about 20 per cent of Kibera has electricity. There are no government medical clinics or hospitals and life expectancy in Kibera is 30 years of age, compared with 57 years of age for the remainder of Kenya.

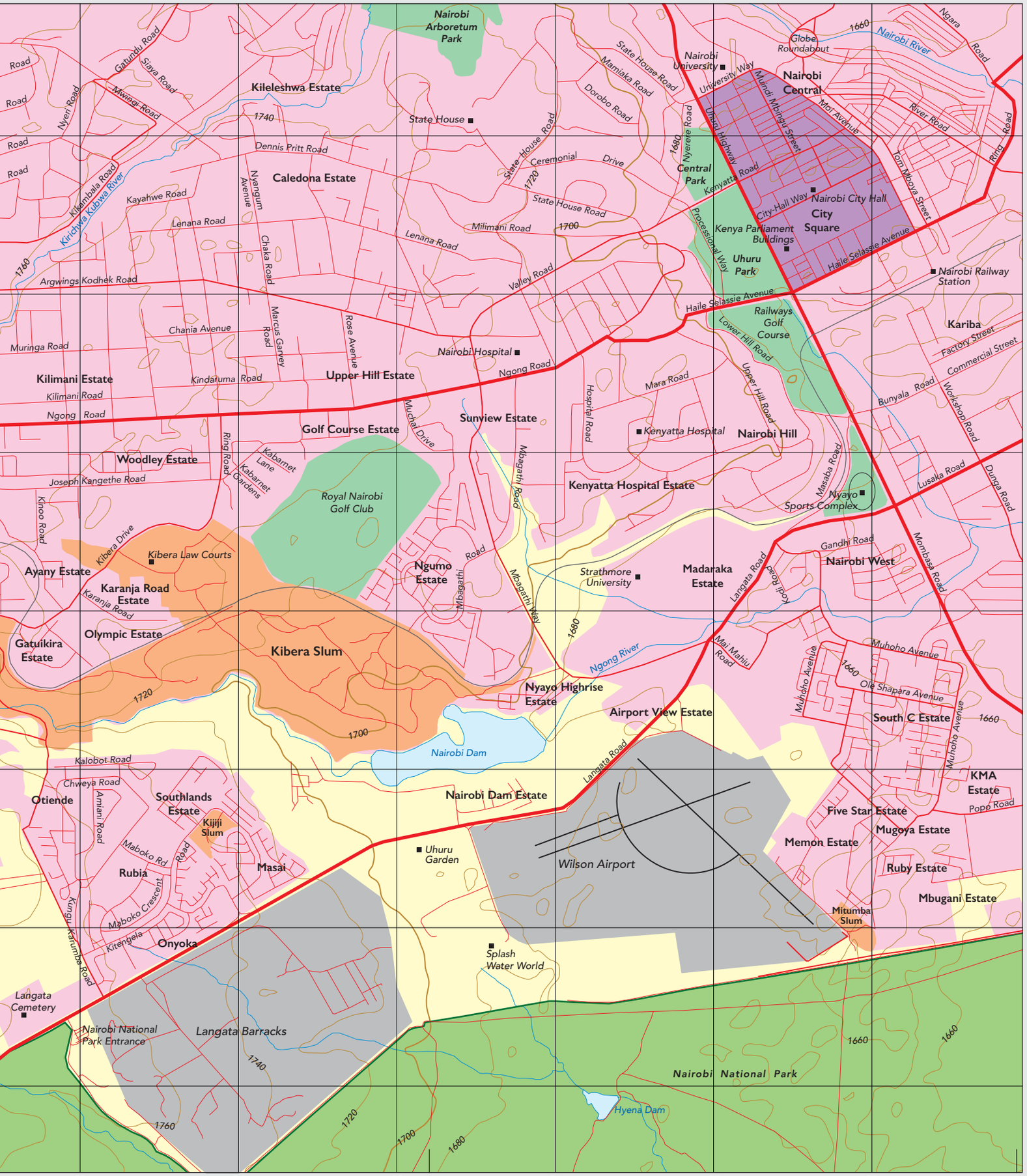


▲ The roughly constructed buildings of Kibera contrast sharply with the homes of wealthier people in the background.

▲ Children play near an open sewer in Kibera. These trenches fill with human waste and rubbish until heavy rain flushes them out.

KIBERA AND SURROUNDS: TOPOGRAPHIC MAP



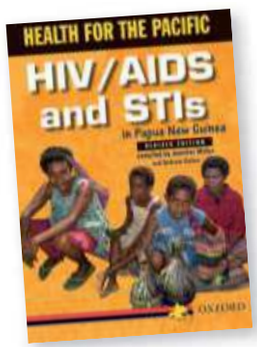

Nairobi Arboretum Park
Kileleshwa Estate
Caledona Estate
State House
Dennis Pritt Road
Kirichwa Kubwa River
Kayahwe Road
Lenana Road
Argwings Kodhek Road
Chaka Road
Nyangum Avenue
Kilimani Estate
Kilimani Road
Ngong Road
Kindaruma Road
Upper Hill Estate
Chania Avenue
Muringa Road
Marcus Garvey Road
Rose Avenue
Nairobi Hospital
Golf Course Estate
Sunview Estate
Muchai Drive
Woodley Estate
Joseph Kangethe Road
Kabarnet Lane
Kabarnet Gardens
Ring Road
Royal Nairobi Golf Club
Kenyatta Hospital Estate
Kenyatta Hospital
Nairobi Hill
Hospital Road
Mara Road
Upper Hill Road
Lower Hill Road
Railways Golf Course
Haile Selassie Avenue
Nairobi Railway Station
Kariba
Factory Street
Commercial Street
Bunyala Road
Workshop Road
Lusaka Road
Dunga Road
Nyayo Sports Complex
Masaba Road
Mombasa Road
Gandhi Road
Nairobi West
Madaraka Estate
Strathmore University
Langata Road
Kodi Road
Ayany Estate
Kibera Drive
Kibera Law Courts
Karanja Road Estate
Karanja Road
Olympic Estate
Gatuikira Estate
Kibera Slum
Ngumo Estate
Mbagathi Road
Mbagathi Way
Ngong River
Mai Mahiu Road
Nyayo Highrise Estate
Airport View Estate
Nairobi Dam
Nairobi Dam Estate
Kalobot Road
Chweya Road
Otiende
Southlands Estate
Kijiji Slum
Amiani Road
Maboko Rd
Maboko Crescent
Kitengela
Rubia
Masai
Uhuru Garden
Wilson Airport
Onyoka
Kiungu Karumba Road
Langata Cemetery
Nairobi National Park Entrance
Langata Barracks
Splash Water World
Hyena Dam
Nairobi National Park
Nairobi University
University Way
Globe Roundabout
Nairobi Central
Mundi Mbingu Street
Mai Avenue
River Road
Ring Road
Uhuru Highway
Nyerere Road
Central Park
Kenyatta Road
City Hall Way
Nairobi City Hall
City Square
Tom Mboya Street
Kenya Parliament Buildings
Uhuru Park
Processional Way
State House Road
State House Drive
Ceremonial Drive
Mamlaka Road
Dorobo Road
Nairobi River
Ngara Road
Muhoho Avenue
Ola Shapara Avenue
South C Estate
KMA Estate
Popo Road
Five Star Estate
Mugoya Estate
Memon Estate
Ruby Estate
Mbugani Estate
Mitumba Slum
1760
1740
1720
1700
1680
1660
53
54
55
36°48'E
56
57
58
36°50'E

# Improving wellbeing through Australian aid

In 2012 to 2013, the Australian Government provided nearly $5 billion in overseas aid. Most of Australia's aid is spent on countries in the Asia–Pacific region, particularly Indonesia, Papua New Guinea and the small island nations of the Pacific. Countries outside the Asia–Pacific region are also given aid when there is a humanitarian disaster such as famine or war. Australian aid helps improve the wellbeing of people in these countries.

## Health

Australia helps countries in our region to develop better quality, community-focused health systems to bring about long-term improvements. Health aid programs focus on simple, cost-effective methods of prevention and treatment such as clean water supplies, immunisation programs, family planning and HIV/AIDS education.




◀ HIV/AIDS information book distributed by AusAID to schools in Papua New Guinea

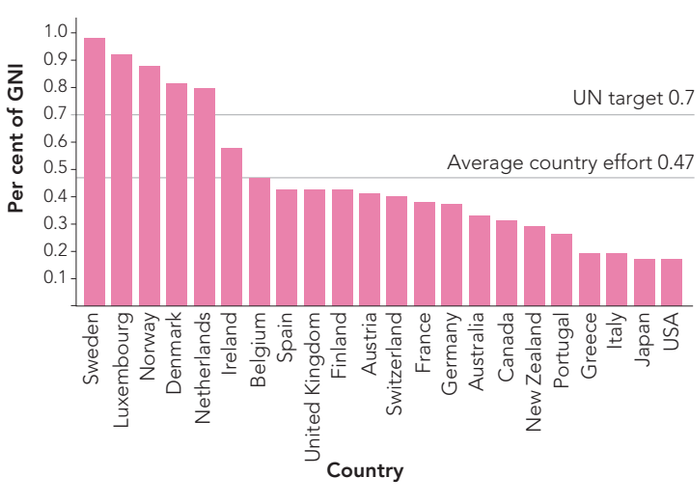
## Security

As part of its commitment to maintaining security in the Asia–Pacific region, the Australian Government has sent defence troops and federal police to assist with problems in many neighbouring countries. The armed forces also help to provide emergency aid to regions hit by natural disasters.

## Education

Australia's objective is to help developing countries improve living conditions by giving more girls and boys in the Asia–Pacific region access to a better education. Through aid programs, the Australian Government aims to help developing countries increase the number of children attending school and to improve the quality of education by increasing the availability and quality of teachers, classrooms and learning materials.

**GOVERNMENT AID: PERCENTAGE OF GROSS NATIONAL INCOME (GNI)**





▲ A Pacific islander collects water from a tank funded by AusAID.

▲ Australian soldiers talk with children in Dili during a peacekeeping operation in Timor-Leste.

▲ A Papua New Guinean teacher instructs her multi-grade class in New Ireland Province.

ASIA–PACIFIC: DEVELOPMENT AND AID




▲ Indonesian children using water from a rainwater tank supplied by AusAID.



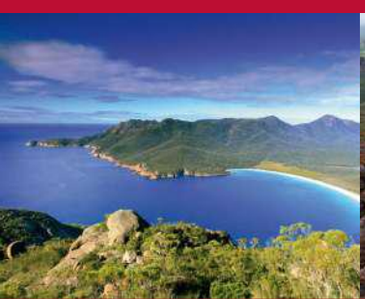
▲ Black Hawk helicopters land in Timor-Leste to deploy troops as part of a United Nations peacekeeping mission.

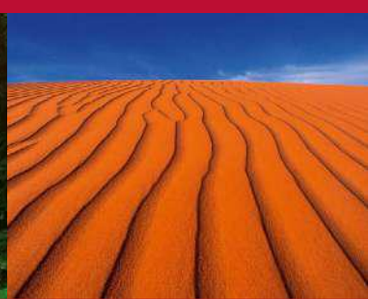


▲ Doctors from Australia perform urgent operations in a makeshift field hospital in Banda Aceh, Indonesia, following the tsunami disaster in December 2004.




# SECTION 3
# Australia



This section includes detailed reference maps of Australia and all Australian states and territories, including in-depth coverage of each capital city. Key facts, geographical data and case studies for each state and territory are also provided.

# Australia: Environments

Australia is the only continent that contains just one country. It is the flattest continent and the world's driest inhabited continent. Australia has a population density of just 2.5 people per square kilometre, with most Australians living in a narrow strip along the eastern coast.

**Mountains** The Blue Mountains are part of the Great Dividing Range in New South Wales.

**Desert** These dunes in the Simpson Desert are over 100 kilometres long.

**Shrubland** This mallee fowl lives in the semi-arid shrublands of north-eastern Victoria.

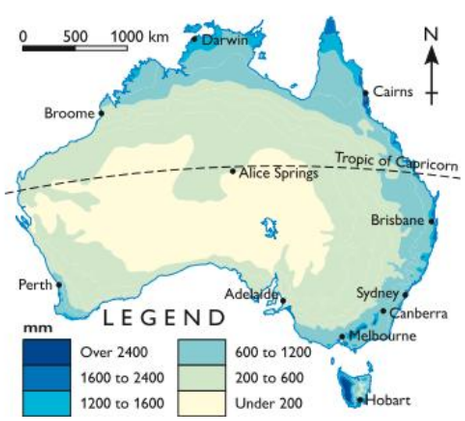
**Cropland** The driest half of Australia's cropland is sown with wheat.

**Grasslands** These termite mounds are found in grasslands in Litchfield National Park in the Northern Territory.

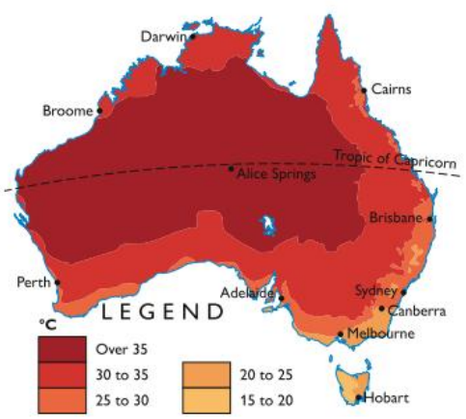
**Forest** Just five per cent of Australia is covered in forest, like this protected forest area in Tasmania.

**Urban area** Sydney is Australia's largest city, with a population of 4.3 million people.

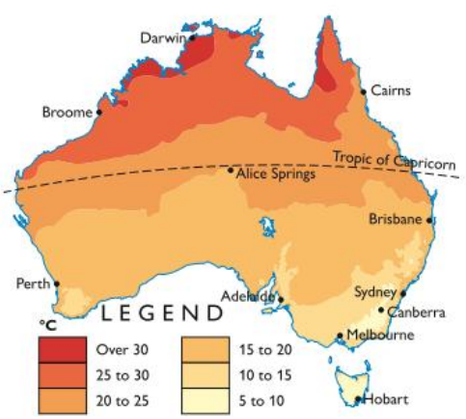
**ANNUAL RAINFALL**




**JANUARY TEMPERATURES**




**JULY TEMPERATURES**



Uluru rises 348 metres above the surrounding desert. It is the world's second largest monolith (single rock). The largest monolith is Mount Augustus in Western Australia.

The Great Barrier Reef is the largest coral reef system in the world. It stretches for more than 2000 kilometres along the coast of Queensland.

ARAFURA SEA
Torres Strait
TIMOR SEA
Gulf of Carpentaria
Cape York Peninsula
PACIFIC OCEAN
GREAT BARRIER REEF
CORAL SEA
INDIAN OCEAN
GREAT DIVIDING RANGE
Great Sandy Desert
Tropic of Capricorn
Uluru 868 m
Simpson Desert
Mt Augustus 1106 m
Great Victoria Desert
Kati Thanda (Lake Eyre)
Dalby
Darling River
Ceduna
Great Australian Bight
Murray River
Sydney
Mt Kosciuszko 2228 m
PACIFIC OCEAN
Bass Strait
TASMAN SEA

LEGEND

- Desert
- Grassland
- Shrubland
- Forest
- Mountains
- Cropland
- Urban area
- Sea floor relief
- Country border
- State/territory border
- Largest city
- Town
- Mountain

N

0 250 500 750 km

SCALE 1:23 000 000

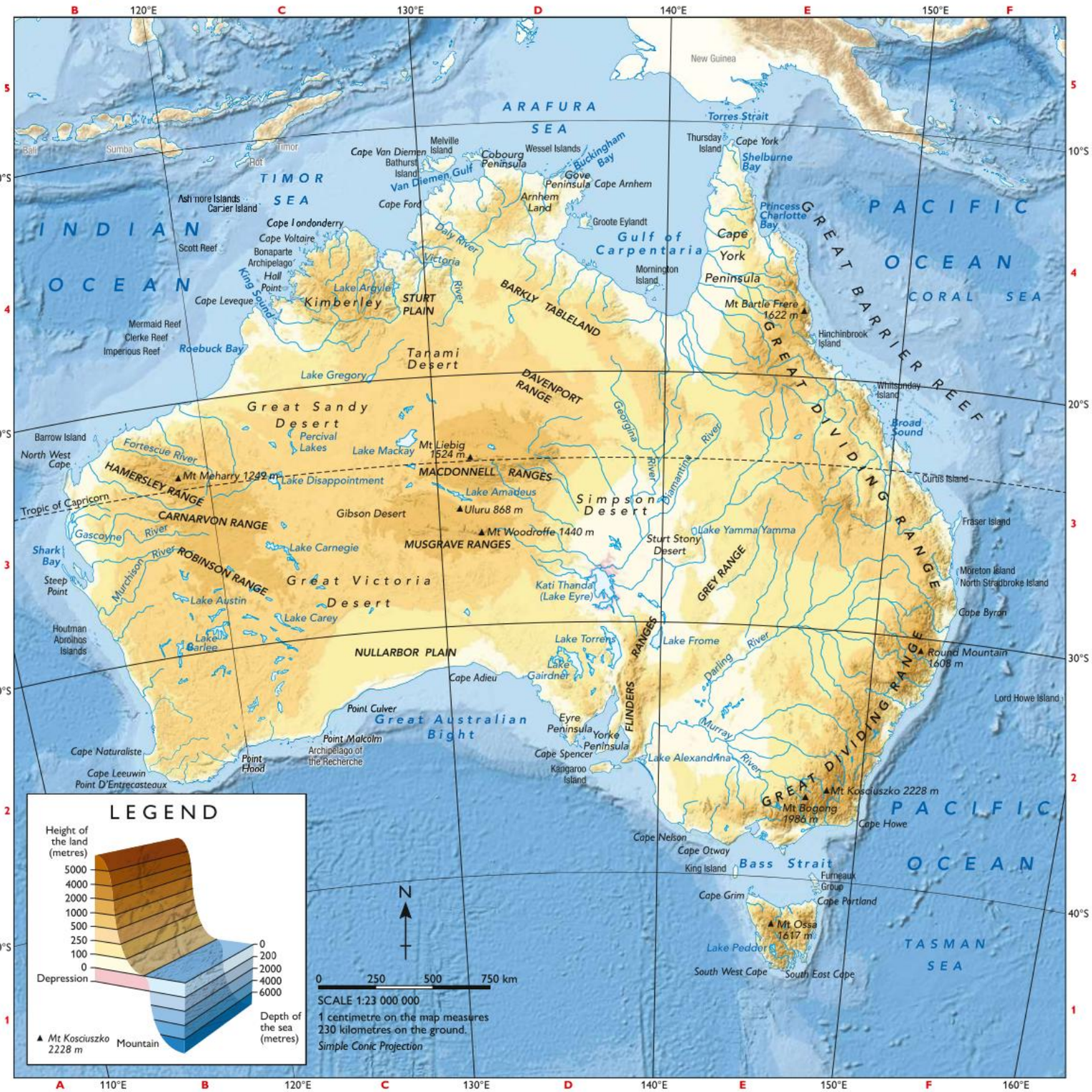
1 centimetre on the map measures 230 kilometres on the ground.

*Simple Conic Projection*

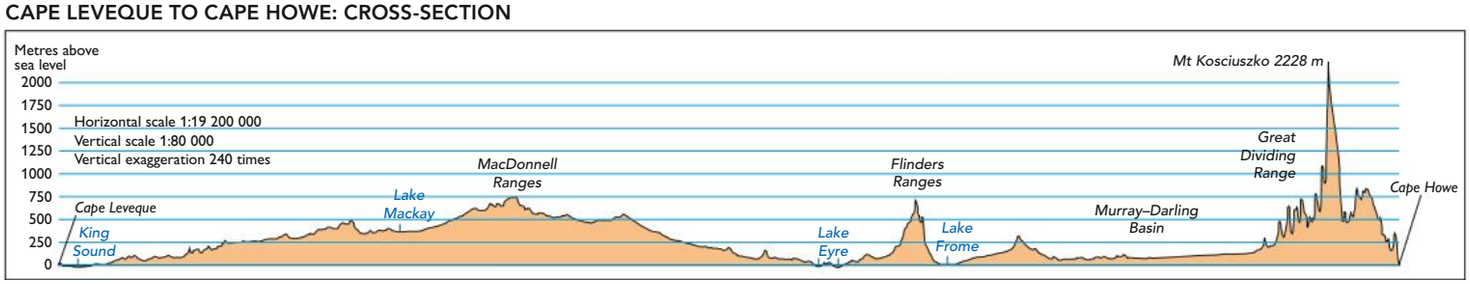
Kati Thanda (Lake Eyre) is Australia's largest lake (when full). Three or four times each century the lake fills with water, but most of the time much of the lake is a crust of salt left from evaporated water.

The world's longest fence, Australia's dingo fence, runs for over 5000 kilometres from Ceduna in South Australia to Dalby in Queensland. It was originally constructed to stop the spread of rabbits, but was rebuilt in the 1920s to keep dingoes away from sheep herds in the south-east of Australia.

# Australia: Physical

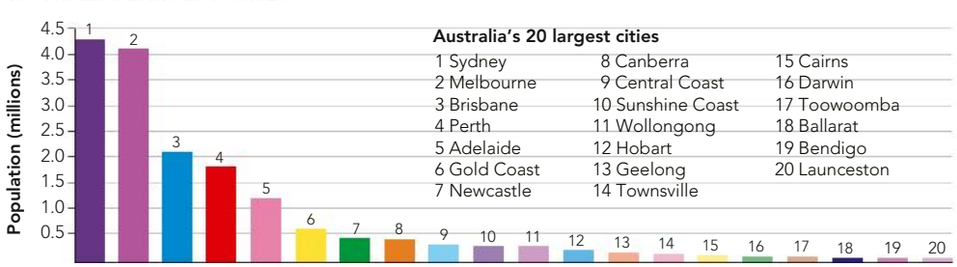



## CAPE LEVEQUE TO CAPE HOWE: CROSS-SECTION



# Australia: Political


## AUSTRALIA: LARGEST CITIES




**Australia's 20 largest cities**

| | | |
|---|---|---|
| 1 Sydney | 8 Canberra | 15 Cairns |
| 2 Melbourne | 9 Central Coast | 16 Darwin |
| 3 Brisbane | 10 Sunshine Coast | 17 Toowoomba |
| 4 Perth | 11 Wollongong | 18 Ballarat |
| 5 Adelaide | 12 Hobart | 19 Bendigo |
| 6 Gold Coast | 13 Geelong | 20 Launceston |
| 7 Newcastle | 14 Townsville | |

▲ Gold Coast (F3) in Queensland

# Western Australia

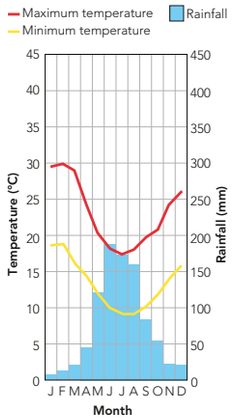
FAST FACTS

**Area:** 2 529 875 sq km (33% of Australia's area)
**Population:** 2 473 000 (10.7% of Australia's population)
**Largest city:** Perth 1 831 755 people (B2)
**Highest point:** Mount Meharry 1249 m (B4)
**Longest river:** Gascoyne 834 km (A4)
**Highest temperature:** Mardie 50.5°C (B4)
**Lowest temperature:** Booylgoo Spring –6.7°C (B3)
**Highest annual rainfall:** Armadale 2169 mm (B2)

▲ Western Australian flag

▲ Western Australian Government coat of arms

**PERTH: CLIMATE GRAPH**

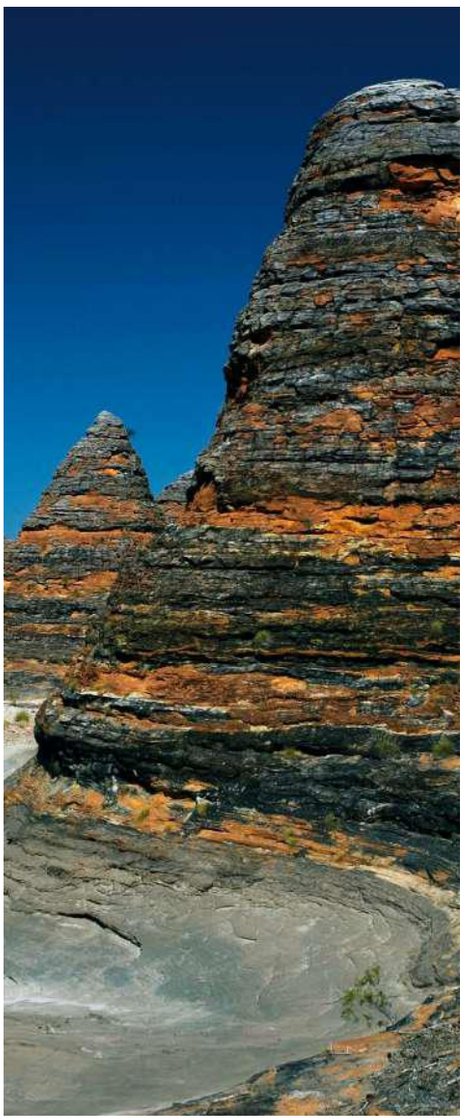



## Australian landscapes

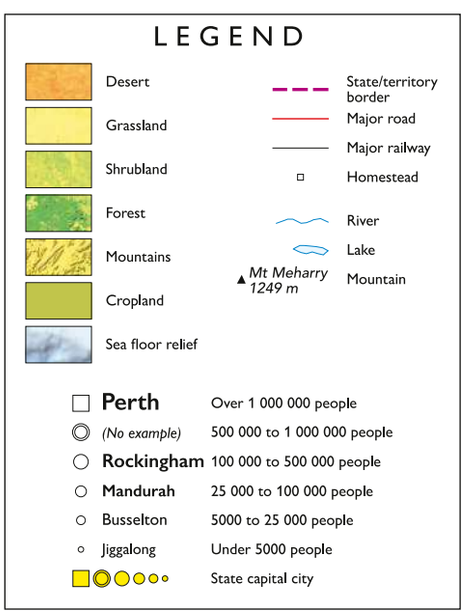
### The Bungle Bungle Range – a karst landscape (D5)

The Bungle Bungle Range is the best example of cone karst in the world. Karst landscapes are formed when layers of rock are dissolved by mildly acidic water. Most karst landscapes are located in tropical areas where there is an abundance of water. Weathering and erosion have carved the Bungle Bungle Range (Purnululu) into spectacular beehive-shaped cone towers. Depositional processes and weathering have given these cones their unique orange and grey bands. The grey bands are marked by cyanobacteria growing on the surface of layers of porous sandstone where moisture accumulates. Crusts of iron oxide give the alternating bands their distinctive orange colour.

▲ An aerial photograph of the Bungle Bungle Range in Western Australia's Purnululu National Park. The area was declared a World Heritage site in 2003.



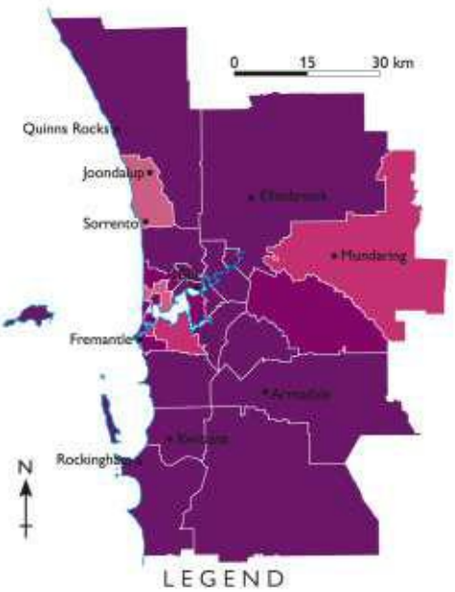
▲ The steep-sided, domed rock cones have a fragile surface.




TIMOR SEA
INDIAN OCEAN
Western Australia
Northern Territory
South Australia
Great Sandy Desert
Gibson Desert
Great Victoria Desert
NULLARBOR PLAIN
Great Australian Bight
Scott Reef
Rowley Shoals
Napier Broome Bay
Cape Bougainville
Cape Londonderry
Cape Ruthieres
Admiralty Gulf
Cape Voltaire
Kalumburu
Joseph Bonaparte Gulf
Bigge Island
Brunswick Bay
Bonaparte Archipelago
Augustus Island
Hall Point
Oombulgurri
Wyndham
Kununurra
Buccaneer Archipelago
Collier Bay
Mt Hann 777 m
CAROLINE RANGE
Durack River
"El Questro"
Cape Leveque
Lombadina
Beagle Bay
King Sound
"Gibb River"
Kimberley
Lake Argyle
Cape Baskerville
Derby
Meda River
Mt Ord 937 m
"Glenroy"
Mt Wells 983 m
BUNGLE BUNGLE RANGE
Dampier Land
"Kimberley Downs"
KING LEOPOLD RANGE
Mt Laptz 645 m
Broome
Gantheaume Point
Roebuck Bay
"Udialla"
Fitzroy River
Fitzroy Crossing
Halls Creek
GREAT ANTRIM PLATEAU
Cape Latouche Treville
Cape Bossut
Eighty Mile Beach
Canning Basin
"Christmas Creek"
Sturt Creek
LEWIS RANGE
Lake Gregory
North West Shelf
Cape Keraudren
Poissonnier Point
Port Hedland
De Grey River
Shay Gap
"Muccan"
Monte Bello Islands
Barrow Island
Dampier
Point Samson
Karratha
Marble Bar
Mardie
"Millstream"
Onslow
Pannawonica
Fortescue River
HAMERSLEY RANGE
Wittenoom
Nullagine
Telfer
Lake Waukarlycarly
Lake White
Lake Wills
Percival Lakes
Lake Dora
Lake Auld
Lake Mackay
North West Cape
Exmouth
Exmouth Gulf
Ningaloo Reef
Mt Bruce 1235 m
Tom Price
Pilbara
Mt Meharry 1249 m
OPHTHALMIA RANGE
Mt Newman 1053 m
Chabjuwardoo Bay
Paraburdoo
Newman
Jiggalong
Kiwirrkurra
Tropic of Capricorn
Cape Farquhar
Ashburton River
BARLEE RANGE
Lyons River
KENNEDY RANGE
Lake Disappointment
Lake MacDonald
PETERMANN RANGES
Geographe Channel
Lake MacLeod
Mt Augustus 1106 m
Mt Egerton 994 m
CARNARVON RANGE
Gascoyne River
Gascoyne Junction
Mt Gascoyne 789 m
Bernier Island
Dorre Island
Carnarvon
Shark Bay
"Dalgety Downs"
ROBINSON RANGE
"Giles Meteorological Station"
Mt Deering 1219m
Cape Inscription
Peron Peninsula
Wooramel River
"Coordewandy"
Mt Frasor 799 m
ERNEST GILES RANGE
WARBURTON RANGE
Warburton
Mt Aloysius 1085 m
Dirk Hartog Island
Steep Point
Denham
Karalundi
Mt Hale 732 m
GLENGARRY RANGE
Mt Squires 705 m
BLACKSTONE RANGE
Murchison River
Meekatharra
Wiluna
Lake Carnegie
Lake Wells
WELD RANGE
Cue
Lake Austin
"Booylgoo Spring"
Mt Pasco 625 m
Kalbarri
Gantheaume Bay
Houtman Abrolhos Islands
Geelvink Channel
Mount Magnet
Sandstone
Yalgoo
Mullewa
Greenough River
Geraldton
Leonora
Laverton
Gwalia
Lake Rason
Lake Carey
Lake Minigwal
Dongara
Morawa
Mt Singleton 698 m
Lake Barlee
Lake Ballard
Menzies
Lake Moore
Mt Jackson 607 m
Dalwallinu
Kalannie
Miling
Bonnie Rock
Moora
Koolyanobbing
Kalgoorlie
Boulder
Karonie
Kitchener
Loongana
Deakin
Coolgardie
Bullfinch
Lancelin
Southern Cross
Kambalda
Rawlinna
Merredin
Widgiemooltha
Lake Lefroy
Wanneroo
Perth
Northam
Kellerberrin
York
Lake Cowan
HAMPTON TABLELAND
Armadale
Norseman
Eucla
Rockingham
Brookton
Hyden
Lake Johnston
Lake Dundas
Mandurah
Pinjarra
Kondinin
Boddington
Narrogin
Newdegate
Point Culver
Harvey
Collie
Wagin
Bunbury
Nyabing
Ravensthorpe
Geographe Bay
Cape Naturaliste
Busselton
Katanning
Kojonup
Esperance
Point Malcolm
Margaret River
Gnowangerup
Hopetoun
Augusta
Manjimup
Bluff Knoll 1096 m
Point Hood
Archipelago of the Recherche
Cape Leeuwin
Pemberton
Bremer Bay
Esperance Bay
Flinders Bay
Mount Barker
Cape Knob
Point D'Entrecasteaux
Denmark
Albany
Walpole
King George Sound
West Cape Howe
N
0 100 200 300 km
SCALE 1:10 000 000
1 centimetre on the map measures 100 kilometres on the ground.
Simple Conic Projection
110°E
115°E
120°E
125°E
130°E
A
B
C
D
E
1
2
3
4
5
6
15°S
20°S
25°S
30°S
35°S

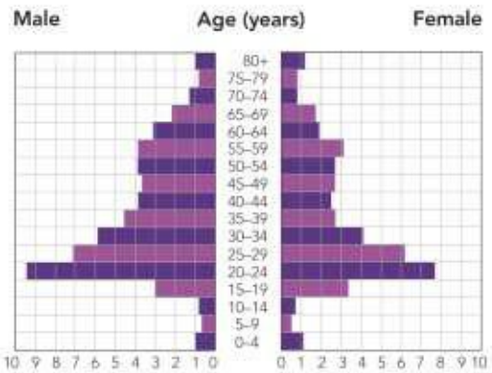
# Perth

## PERTH: POPULATION CHANGE

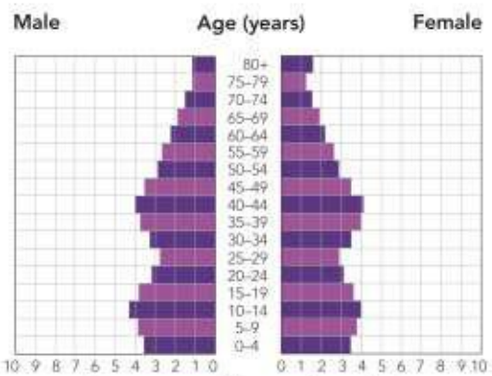



▲ Looking south over Perth's CBD

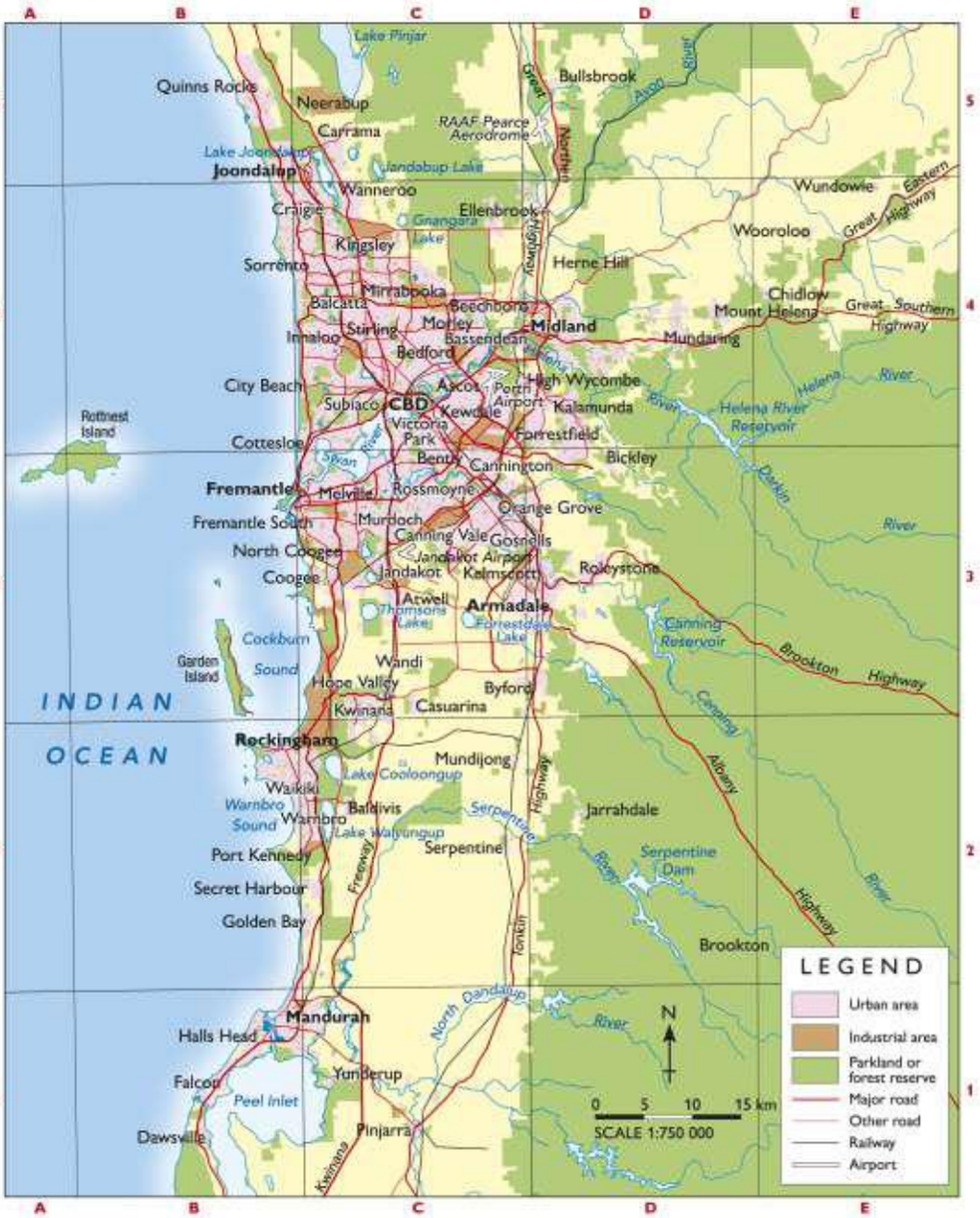
## PERTH CBD: POPULATION PYRAMID



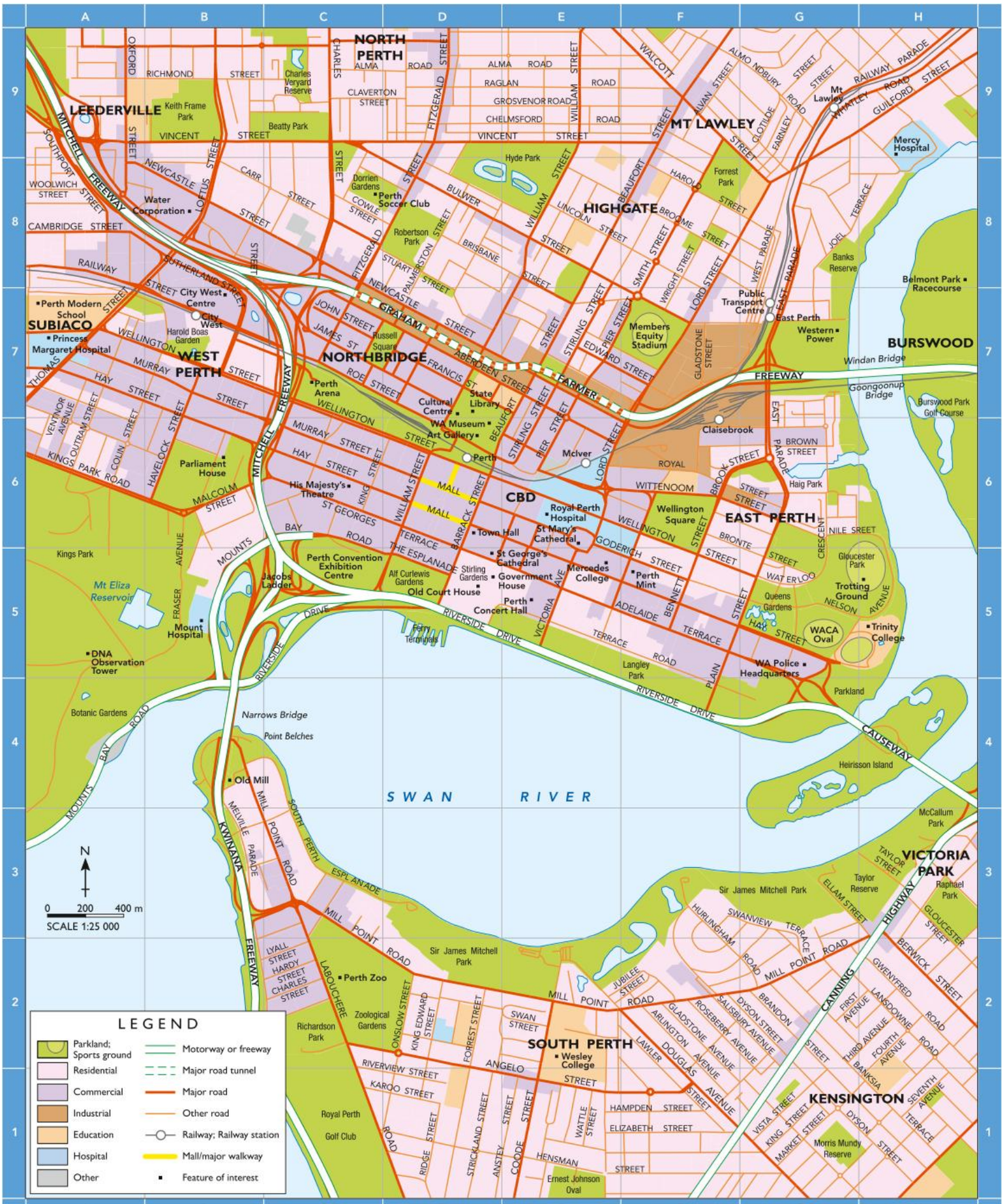

## ROCKINGHAM: POPULATION PYRAMID




## PERTH: LAND USE



PERTH: CBD AND INNER SUBURBS



# Northern Territory and Darwin

FAST FACTS

**Area:** 1 349 129 sq km (17.5% of Australia's area)

**Population:** 236 900 (1.1% of Australia's population)

**Largest city:** Darwin 116 093 people (C7)

**Highest point:** Mount Zeil 1531 m (D2)

**Longest river:** Victoria 510 km (C5)

**Highest temperature:** Finke 48.3°C (E1)

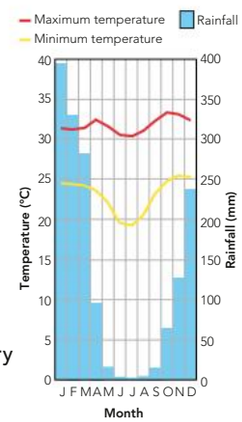
**Lowest temperature:** Alice Springs –7.5°C (D2)

**Highest annual rainfall:** Elizabeth Downs 2966 mm (C7)

▲ Northern Territory flag

▲ Northern Territory Government coat of arms

**DARWIN: CLIMATE GRAPH**



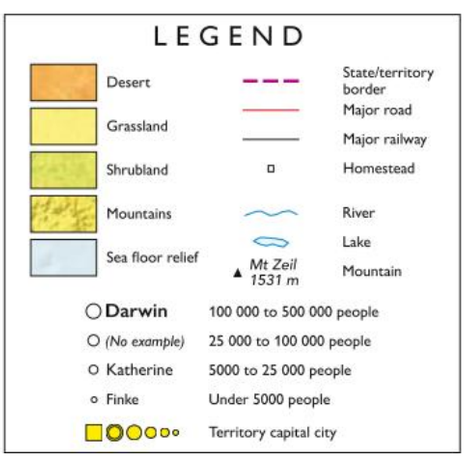

**DARWIN: LAND USE**


▲ Chambers Pillar rises 50 metres above the surrounding plain of the Simpson Desert.

## Australian landscapes

### Chambers Pillar – a desert landscape (D1)

Chambers Pillar in the Northern Territory is a desert landform known as a butte. It is the remnant of a sandstone mountain, eroded by wind, rain and large changes in desert temperature that can shatter rocks. The butte is surrounded by eroded sandstone rock debris known as talus. The almost vertical walls of the pillar are capped in red sandstone.




ARAFURA SEA
TIMOR SEA
Arnhem Land
Gulf of Carpentaria
Northern Territory
Western Australia
Queensland
South Australia
Cape Van Diemen
Tiwi Islands
Dundas Strait
Croker Island
Minjilang
Cape Wessel
Wessel Islands
Coburg Peninsula
Milikapiti
Bathurst Island
Melville Island
Warruwi
Goulburn Islands
The English Company's Islands
Cape Fourcroy
Nguiu
Van Diemen Gulf
Clarence Strait
Chambers Bay
Nabarlek
Maningrida
Cape Stewart
Milingimbi
Galiwinku
Buckingham Bay
Melville Bay
Nhulunbuy
Darwin
"Koolpinyah"
Palmerston
Belyuen
Oenpelli
Jabiru
Gapuwiyak
Gove Peninsula
Cape Arnhem
South Alligator River
Point Blaze
Batchelor
Mt Bundey 214 m
Mt Gilruth 558 m
Goyder River
Peron Islands
Anson Bay
Adelaide River
Litchfield
Elizabeth Downs
Mt Greenwood 152 m
Mt Evelyn 366 m
Bulman
Mt Marumba
Cape Shield
Port Langdon
Joseph Bonaparte Gulf
Cape Dombey
Nauiyu Nambiyu
Pine Creek
Katherine River
Daly River
Peppimenarti
Mountain Valley
Angurugu
Groote Eylandt
Wadeye
Pearce Point
Turtle Point
Barunga
Katherine
Maranboy
Beswick
Urapunga
Ngukurr
Numbulwar
Tasman Point
Limmen Bight River
Roper River
Roper Valley
Mataranka
Elsey
Hodgson Downs
Willeroo
Coolibah
Timber Creek
Larrimah
The Four Archers
Nutwood Downs
West Island
Sir Edward Pellew Group
Vanderlin Island
Victoria River
Borroloola
Killarney
Victoria River Downs
Daly Waters
Tanumbirini
Top Springs
Dunmarra
McArthur River
Robinson River
Pigeon Hole
Mount Sanford
Camfield
STURT PLAIN
Newcastle Waters
Newcastle Creek
Calvert Hills
Kalkarindji
Wave Hill
Cattle Creek
Elliott
BARKLY TABLELAND
Lake Woods
Anthony Lagoon
Nicholson River
Eva Downs
Renner Springs
Lajamanu
Brunette Downs
Banka Banka
Alexandria
Alroy Downs
Tanami Desert
Tennant Creek
Mt Samuel 436 m
Tanami
Avon Downs
The Granites 433 m
Devils Marbles 433 m
Wauchope
Ali Curung
Hatches Creek
Elkedra
Murray Downs
Lake Nash
Georgina
Lake White
Mt Strzelecki 636 m
Willowra
Barrow Creek
Mt Stirling 575 m
Anningie
Mt Tops 705 m
Ammaroo
Ooratippra
River
Mt Singleton 808 m
Mt Hardy 840 m
Mt Gardiner 999 m
Ti-Tree
Pine Hill
Utopia
Yuendumu
Lake Mackay
Mt Freeling 1005 m
Sandover
Central Mount Wedge 1067 m
Lake Lewis
Harts Range
Mt Brassey 1216 m
Jinka
Hay River
MACDONNELL RANGES
Papunya
Walungurru
Mt Liebig 1524 m
Mt Zeil 1531 m
Mt Laughlen 1172 m
Tropic of Capricorn
Haasts Bluff
Hamilton Downs
Lake MacDonald
Camels Hump 921 m
Mt Conway 1133 m
Alice Springs
Iwupataka
Todd River
Ringwood
Hermannsburg
Areyonga
Santa Teresa
Todd River
Hale River
Lake Neale
Finke
Henbury
Lake Amadeus
Kaltukatjara
Chambers Pillar 497 m
Yulara
Mount Ebenezer
Erldunda
Kata Tjuta 1069 m
Uluru 868 m
Curtin Springs
Finke
Andado
Simpson Desert
PETERMANN RANGES
Mulga Park
Kulgera
River
N
0 50 100 150 km
SCALE 1:7 200 000
1 centimetre on the map measures 72 kilometres on the ground.
Simple Conic Projection

# South Australia

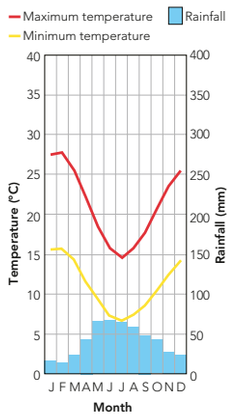
FAST FACTS

**Area:** 983 482 sq km (12.7% of Australia's area)
**Population:** 1 662 200 (7.2% of Australia's population)
**Largest city:** Adelaide 1 249 638 people (F3)
**Highest point:** Mount Woodroffe 1435 m (B7)
**Longest river:** Murray 2375 km (F3)
**Highest temperature:** Oodnadatta 50.7°C (D7)
**Lowest temperature:** Yongala –8.2°C (F4)
**Highest annual rainfall:** Aldgate 1853 mm (F3)

▲ South Australian flag

▲ South Australian Government coat of arms

**ADELAIDE: CLIMATE GRAPH**



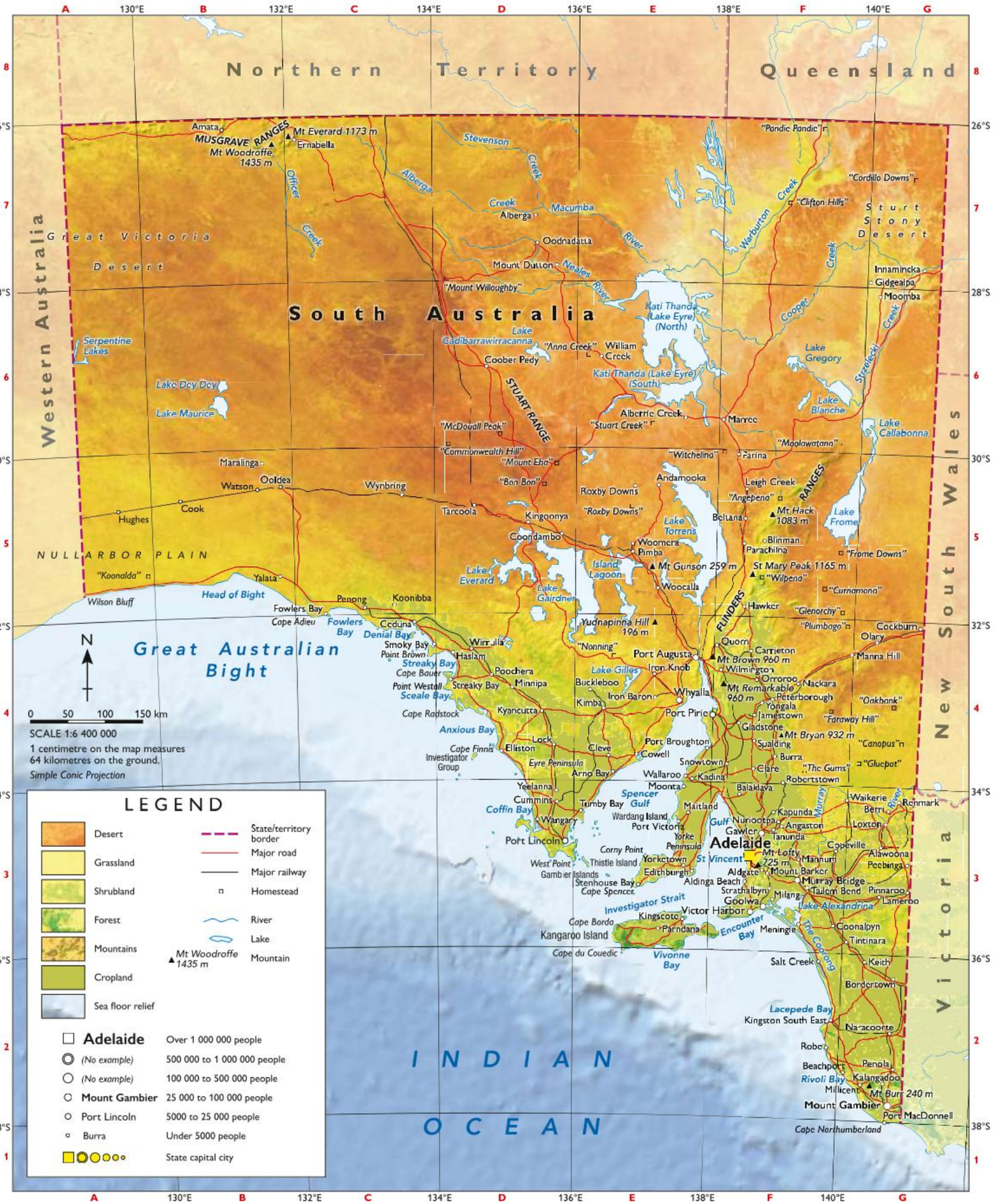

## Australian landscapes

### Flinders Ranges – a mountain landscape (F5)

The Flinders Ranges, South Australia's longest mountain range, stretch for over 430 kilometres. These fold mountains were pushed up into a mountain range about 500 million years ago when two tectonic plates collided. The top of the range has been removed by weathering and erosion, exposing the edges of the folded layers of sedimentary rock. Wilpena Pound, the best-known landmark in the Flinders Ranges, is an example of the folding and weathering process.

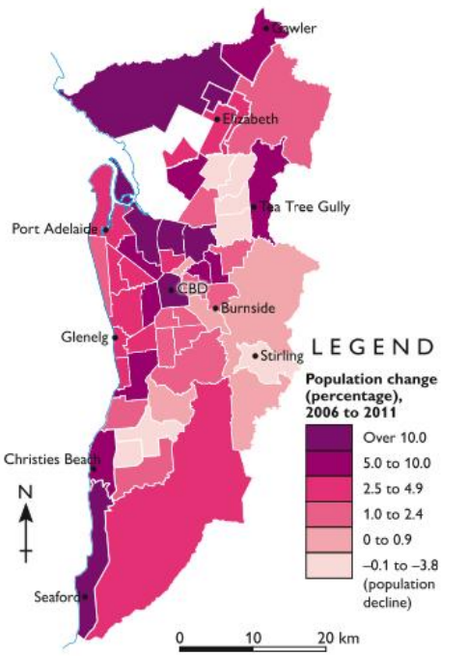
▲ The layers of folded sedimentary rock can be seen clearly in this photo of the Flinders Ranges.

▲ Wilpena Pound is a natural rock amphitheatre that covers an area of 80 square kilometres. The floor of Wilpena Pound is approximately 17 kilometres long and 8 kilometres wide, with the outer ring of cliffs rising to about 500 metres.

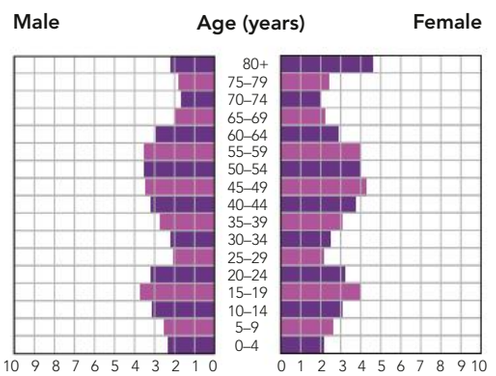

Northern Territory
Queensland
South Australia
Western Australia
New South Wales
Victoria
Great Victoria Desert
Stuart Stony Desert
NULLARBOR PLAIN
Great Australian Bight
INDIAN OCEAN
MUSGRAVE RANGES
STUART RANGE
FLINDERS RANGES
Amata
Mt Everard 1173 m
Ernabella
Mt Woodroffe 1435 m
Officer Creek
Stevenson Creek
Alberga Creek
Macumba River
Oodnadatta
Mount Dutton
Neales River
"Mount Willoughby"
Warburton Creek
"Pandie Pandie"
"Cordillo Downs"
"Clifton Hills"
Cooper Creek
Innamincka
Gidgealpa
Moomba
Strzelecki Creek
Lake Gregory
Lake Blanche
Lake Callabonna
Kati Thanda Lake Eyre (North)
Kati Thanda (Lake Eyre) (South)
Lake Cadibarrawirracanna
"Anna Creek"
William Creek
Coober Pedy
Serpentine Lakes
Lake Dey Dey
Lake Maurice
"McDouall Peak"
"Commonwealth Hill"
"Mount Eba"
"Ban Ban"
Albermc Creek
"Stuart Creek"
Marree
"Witchelina"
Farina
"Moolawatana"
Maralinga
Watson
Ooldea
Wynbring
Cook
Hughes
Tarcoola
Kingoonya
Roxby Downs
"Roxby Downs"
Andamooka
Leigh Creek
"Angepena"
Mt Hack 1083 m
Lake Frome
Lake Torrens
Coondambo
Woomera
Pimba
Mt Gunson 259 m
Island Lagoon
Lake Everard
Lake Gairdner
Woocalla
St Mary Peak 1165 m
"Wilpena"
"Curnamona"
Blinman
Parachilna
"Frome Downs"
"Koonalda"
Yalata
Head of Bight
Wilson Bluff
Penong
Koonibba
Fowlers Bay
Cape Adieu
Ceduna
Denial Bay
Smoky Bay
Point Brown
Streaky Bay
Cape Bauer
Point Westall
Sceale Bay
Cape Radstock
Anxious Bay
Cape Finnis
Elliston
Lock
Investigator Group
Eyre Peninsula
Arno Bay
Cleve
Port Broughton
Cowell
Snowtown
Wallaroo
Kadina
Clare
Robertstown
Balaklava
Moonta
Yeelanna
Cummins
Spencer Gulf
Coffin Bay
Tumby Bay
Wangary
Wardang Island
Port Victoria
Maitland
Port Lincoln
Corny Point
Yorke Peninsula
West Point
Gambier Islands
Thistle Island
Yorketown
Edithburgh
Stenhouse Bay
Cape Spencer
Investigator Strait
Kingscote
Cape Borda
Kangaroo Island
Parndana
Cape du Couedic
Vivonne Bay
Encounter Bay
Victor Harbor
Goolwa
Milang
Lake Alexandrina
Meningie
Coonalpyn
Tintinara
Salt Creek
Keith
Bordertown
The Coorong
Lacepede Bay
Kingston South East
Naracoorte
Robe
Beachport
Rivoli Bay
Millicent
Kalangadoo
Penola
Mt Burr 240 m
Mount Gambier
Port MacDonnell
Cape Northumberland
Port Augusta
Iron Knob
Lake Gilles
Buckleboo
Iron Baron
Kimba
Whyalla
Mt Brown 960 m
Wilmington
Orroroo
Carrieton
Quorn
Hawker
Nackara
Mt Remarkable 960 m
Peterborough
Yongala
Jamestown
Gladstone
Spalding
Mt Bryan 932 m
Burra
"Thc Gums"
"Glucpot"
"Canopus"
"Faraway Hill"
"Oakbank"
"Glenorchy"
"Plumbago"
Cockburn
Olary
Manna Hill
"Nonning"
Yudnapinna Hill 196 m
Waikerie
Berri
Murray River
Renmark
Kapunda
Angaston
Loxton
Gawler
Tanunda
Nuriootpa
Gulf St Vincent
Adelaide
Mt Lofty 725 m
Mannum
Copeville
Alawoona
Peebinga
Aldgate
Mount Barker
Aldinga Beach
Murray Bridge
Tailem Bend
Pinnaroo
Lameroo
Strathalbyn
Milang
Goolwa
Victor Harbor
Lake Alexandrina
Coonalpyn
Tintinara
Keith
Bordertown
Salt Creek
Lacepede Bay
Kingston South East
Naracoorte
Robe
Beachport
Penola
Kalangadoo
Millicent
Mt Burr 240 m
Mount Gambier
Port MacDonnell
Cape Northumberland
Rivoli Bay
Lake Callabonna
Lake Blanche
Lake Gregory
Kati Thanda (Lake Eyre) (South)
Kati Thanda Lake Eyre (North)
Lake Cadibarrawirracanna
Lake Torrens
Lake Frome
Lake Everard
Lake Gairdner
Island Lagoon
Lake Gilles
Lake Alexandrina
Spencer Gulf
Gulf St Vincent
Coffin Bay
Anxious Bay
Sceale Bay
Streaky Bay
Denial Bay
Fowlers Bay
Head of Bight
Investigator Strait
Encounter Bay
Vivonne Bay
The Coorong
Lacepede Bay
Rivoli Bay
Mount Gambier
Adelaide
Port Lincoln
Port Pirie
Port Augusta
Whyalla
Mt Gambier
Murray River
Flinders Ranges
Stuart Range
Musgrave Ranges
Great Victoria Desert
Nullarbor Plain
Great Australian Bight
Indian Ocean
N
0 50 100 150 km
SCALE 1:6 400 000
1 centimetre on the map measures 64 kilometres on the ground.
Simple Conic Projection
LEGEND
Desert
Grassland
Shrubland
Forest
Mountains
Cropland
Sea floor relief
State/territory border
Major road
Major railway
Homestead
River
Lake
Mt Woodroffe 1435 m
Mountain
Adelaide Over 1 000 000 people
(No example) 500 000 to 1 000 000 people
(No example) 100 000 to 500 000 people
Mount Gambier 25 000 to 100 000 people
Port Lincoln 5000 to 25 000 people
Burra Under 5000 people
State capital city

# Adelaide

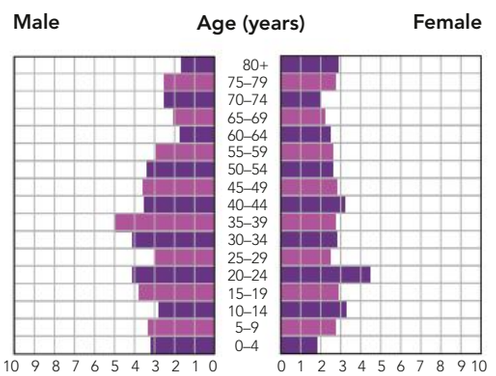
## ADELAIDE: POPULATION CHANGE




## BURNSIDE: POPULATION PYRAMID



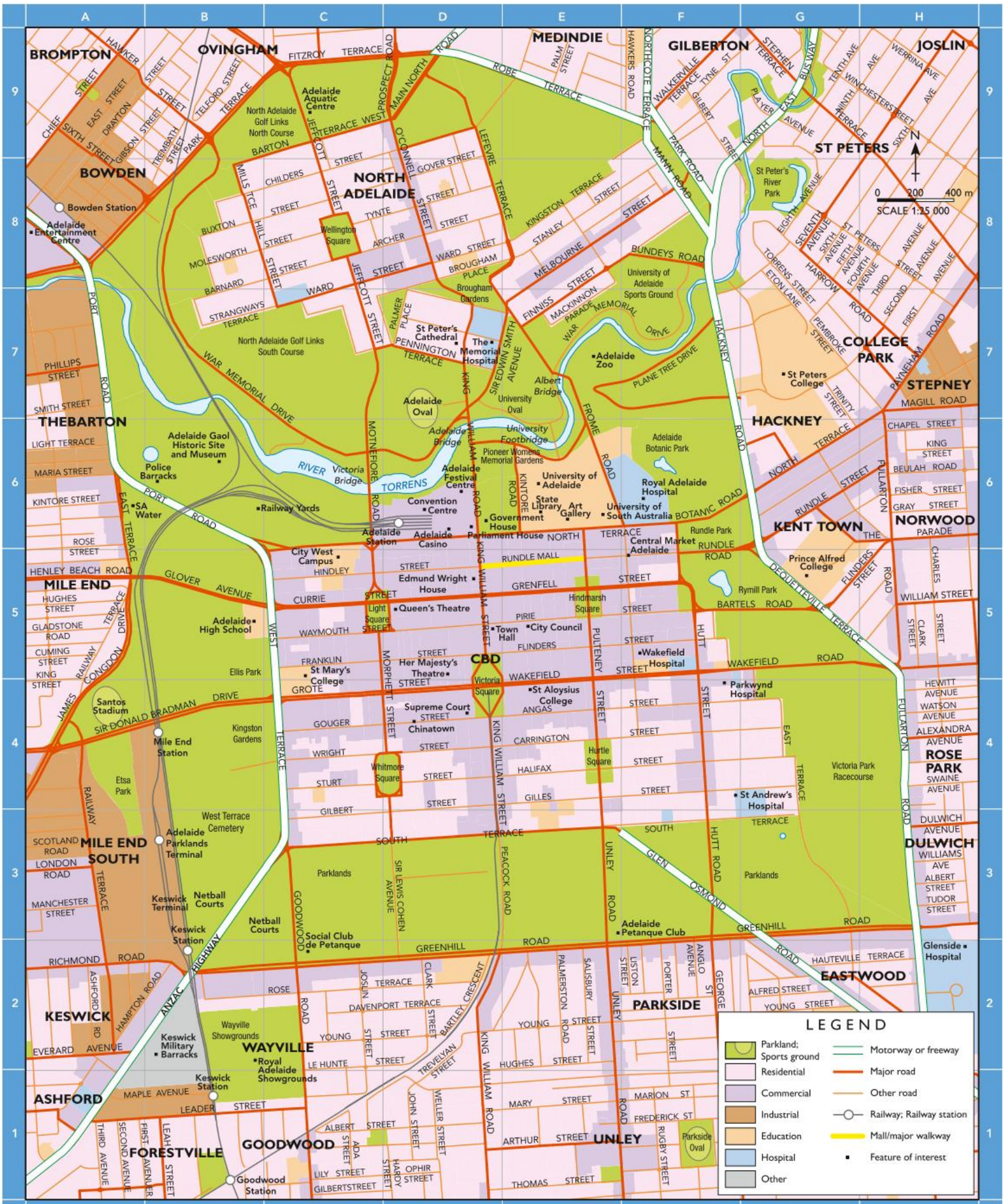

## ELIZABETH: POPULATION PYRAMID




▲ Looking south to Adelaide's CBD

## ADELAIDE: LAND USE

ADELAIDE: CBD AND INNER SUBURBS



# Queensland

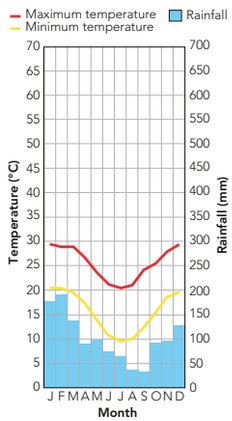
FAST FACTS

**Area:** 1 730 648 sq km (22.2% of Australia's area)
**Population:** 4 610 900 (20.1% of Australia's population)
**Largest city:** Brisbane 2 097 515 people (D1)
**Highest point:** Mount Bartle Frere 1622 m (C3)
**Longest river:** Flinders 1004 km (B3)
**Highest temperature:** Cloncurry 53.1°C (B2)
**Lowest temperature:** Warwick –11°C (D1)
**Highest annual rainfall:** Mount Bellenden Ker 8312 mm (C3)

▲ Queensland flag

▲ Queensland Government coat of arms

**BRISBANE: CLIMATE GRAPH**

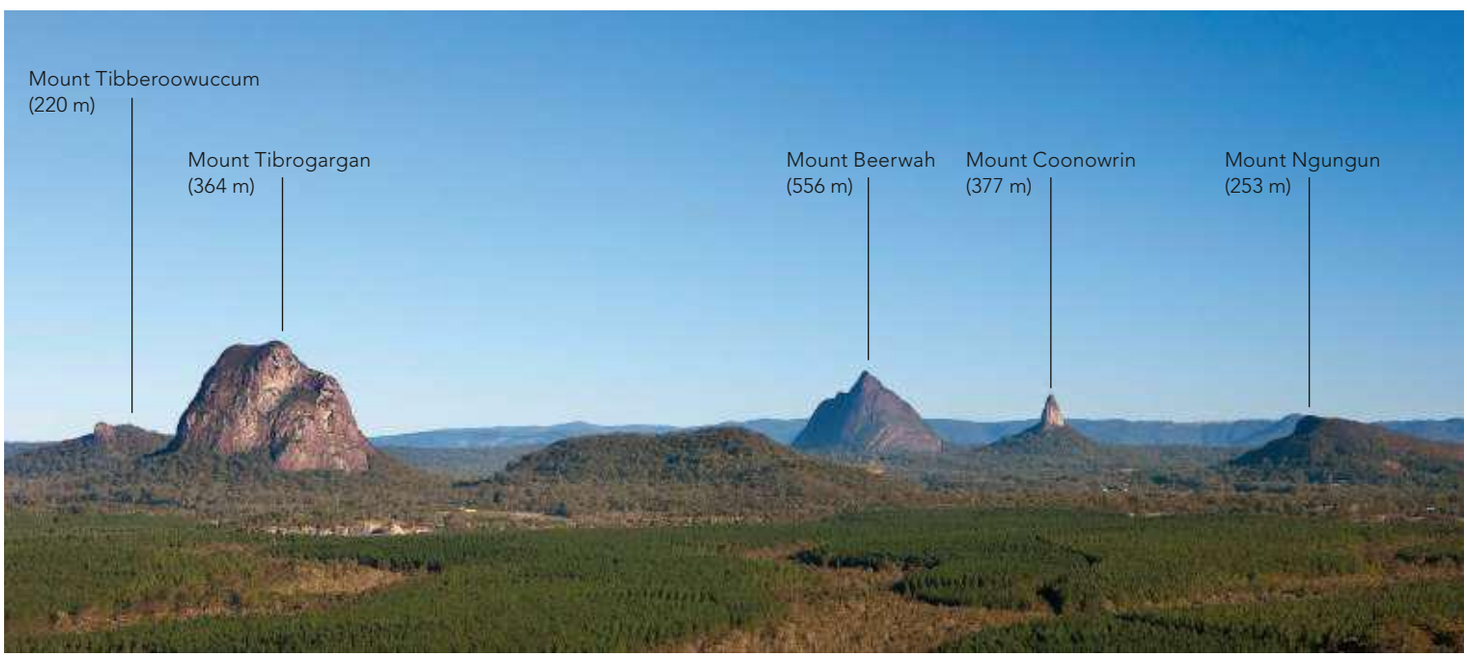



## Australian landscapes

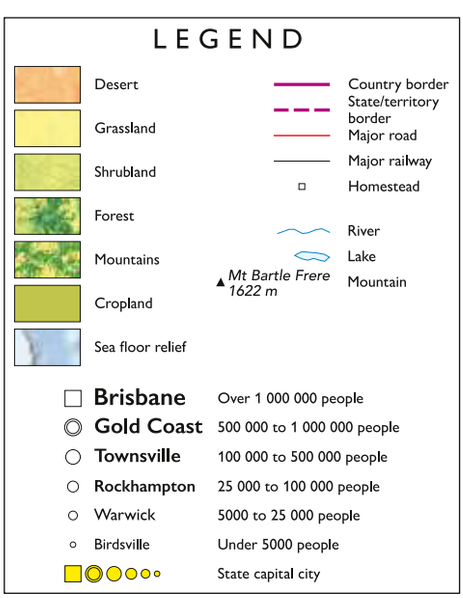
### Glass House Mountains – a mountain landscape (D1)

Queensland's Glass House Mountains are the remnants of volcanic activity along the east coast of Australia. Molten lava cooled to form hard rock in the cores of volcanoes 26 to 27 million years ago. The surrounding softer rocks from the volcanoes have been eroded, but the hardened magma plugs in the vents remain. Today, the Glass House Mountains are a group of eleven steep-sided volcanic plugs that rise above the coastal plain on Queensland's Sunshine Coast.

▼ The main peaks of the Glass House Mountains



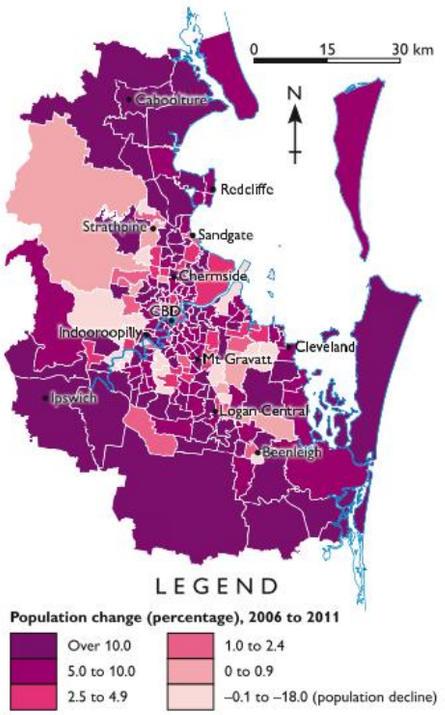

▲ The highest Glass House Mountain, Mount Beerwah, rises 556 metres above the coastal plain.



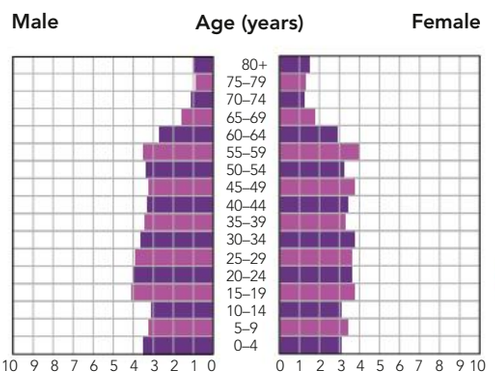

Queensland
Northern Territory
New South Wales
South Australia
Gulf of Carpentaria
Cape York Peninsula
PAPUA NEW GUINEA
CORAL SEA
PACIFIC OCEAN
Great Barrier Reef
Great Dividing Range
Gregory Range
Grey Range
Selwyn Range
Leichhardt Range
Connors Range
Expedition Range
Auburn Range
Torres Strait
Endeavour Strait
Cairns
Townsville
Mackay
Rockhampton
Gladstone
Bundaberg
Hervey Bay
Maryborough
Brisbane
Ipswich
Toowoomba
Gold Coast
Sunshine Coast
Mount Isa
Charters Towers
Longreach
Roma
Emerald
Tropic of Capricorn
SCALE 1:9 500 000
1 centimetre on the map measures 95 kilometres on the ground.
Simple Conic Projection

# Brisbane

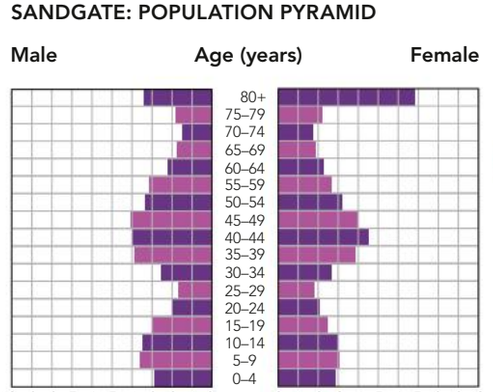
## BRISBANE: POPULATION CHANGE




## STRATHPINE: POPULATION PYRAMID




## SANDGATE: POPULATION PYRAMID




▲ Looking south-west over the Story Bridge to the CBD

## BRISBANE: LAND USE

BRISBANE: CBD AND INNER SUBURBS

# New South Wales

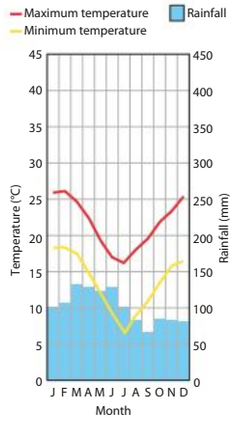
FAST FACTS

**Area:** 800 642 sq km (10.4% of Australia's area)
**Population:** 7 348 900 (32.2% of Australia's population)
**Largest city:** Sydney 4 289 497 people (F3)
**Highest point:** Mount Kosciuszko 2228 m (E1)
**Longest river:** Murray 2375 km (B2)
**Highest temperature:** Wilcannia 50°C (B4)
**Lowest temperature:** Charlotte Pass –23°C (E1)
**Highest annual rainfall:** Tallowwood Point 4540 mm (G4)

▲ New South Wales flag

▲ New South Wales Government coat of arms

**SYDNEY: CLIMATE GRAPH**

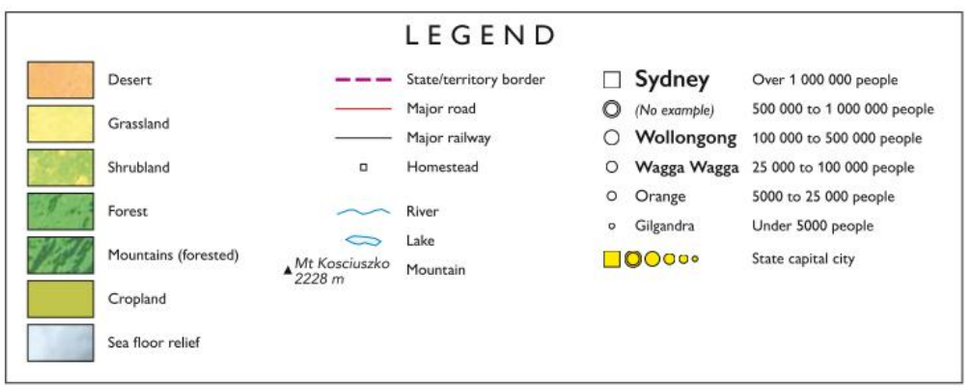


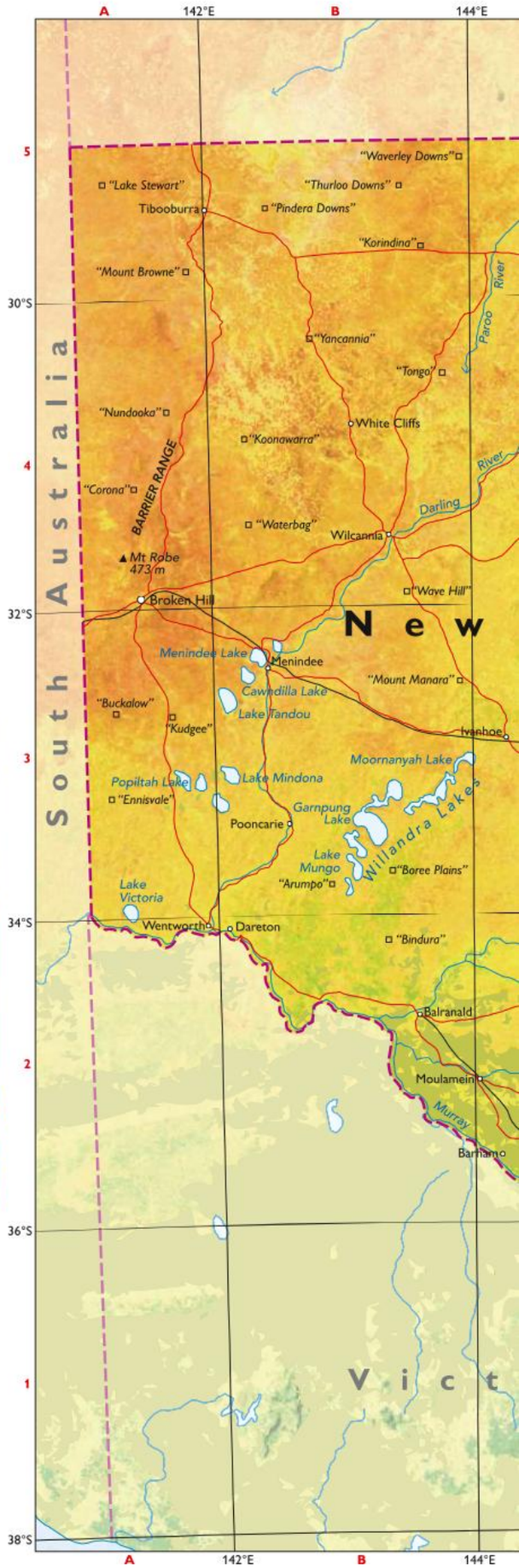

## Australian landscapes

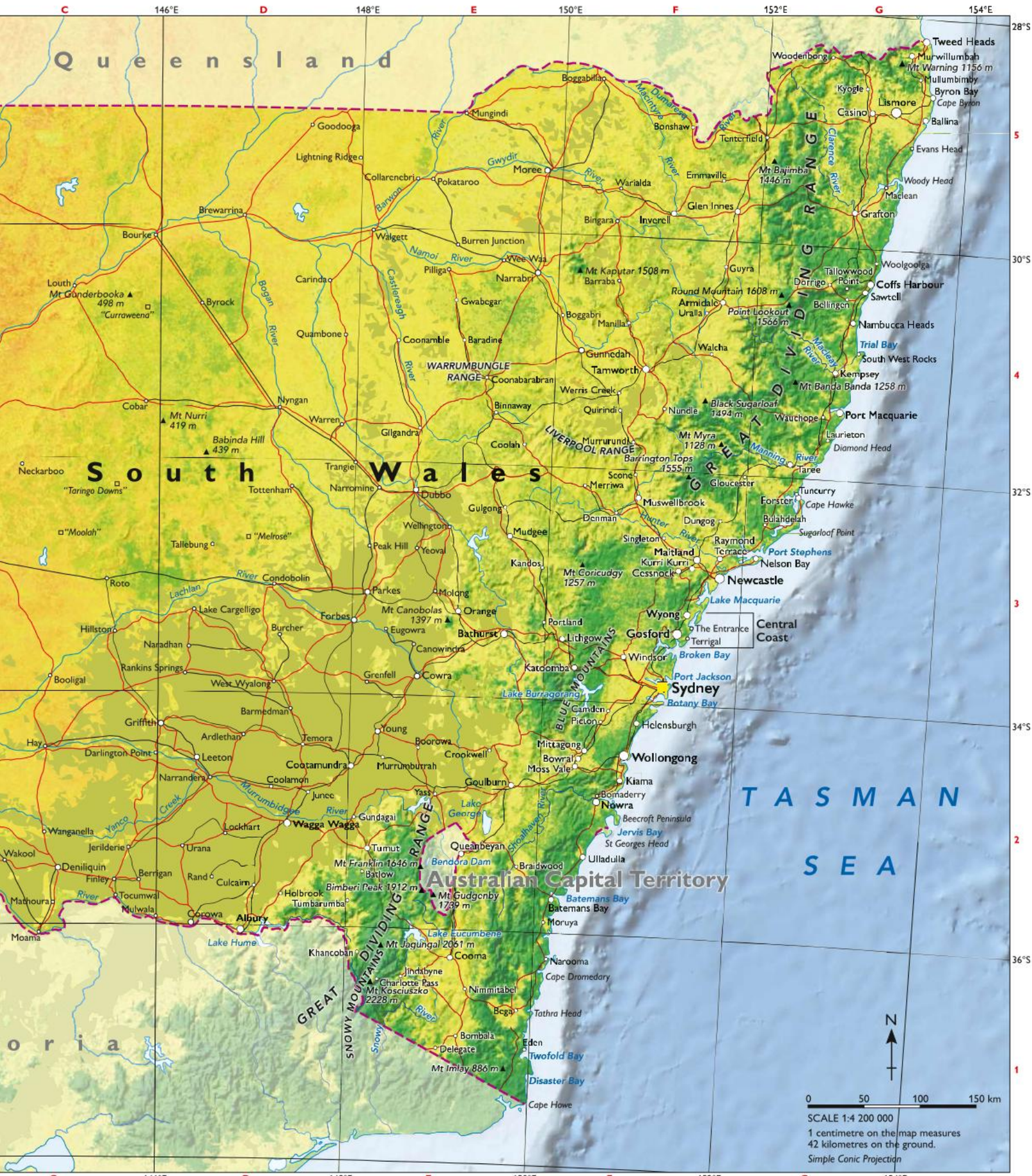
### Lake Mungo – an arid landscape (B3)

A 25-kilometre-long ridge of crescent-shaped sand dunes (known as lunettes) is located on the shores of the dry Lake Mungo in south-western New South Wales. The lunettes have been carved into amazing shapes by wind and water. The earliest human skeleton in Australia was found here, along with fossils of huge megafauna.

▼ These lunettes on the shore of dry Lake Mungo are part of the Willandra Lakes Region World Heritage site.

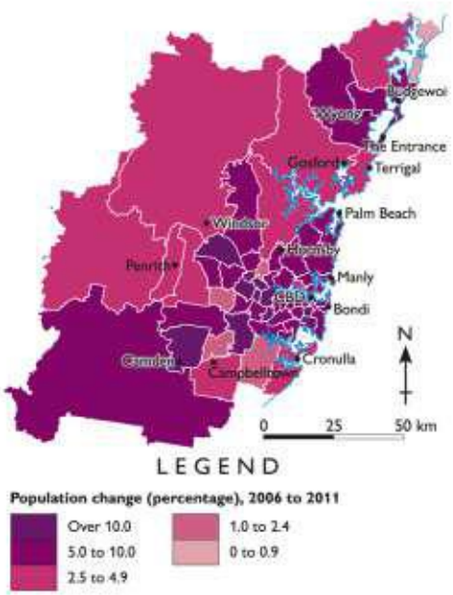



Queensland
South Wales
Australian Capital Territory
TASMAN SEA
Tweed Heads
Murwillumbah
Mt Warning 1156 m
Mullumbimby
Byron Bay
Cape Byron
Lismore
Casino
Ballina
Evans Head
Woody Head
Maclean
Grafton
Coffs Harbour
Sawtell
Woolgoolga
Tallowwood
Dorrigo
Point
Bellingen
Nambucca Heads
Trial Bay
South West Rocks
Kempsey
Mt Banda Banda 1258 m
Port Macquarie
Wauchope
Laurieton
Diamond Head
Taree
Tuncurry
Cape Hawke
Forster
Bulahdelah
Sugarloaf Point
Nelson Bay
Port Stephens
Newcastle
Lake Macquarie
Central Coast
The Entrance
Terrigal
Broken Bay
Port Jackson
Sydney
Botany Bay
Wollongong
Kiama
Nowra
Beecroft Peninsula
Jervis Bay
St Georges Head
Batemans Bay
Moruya
Narooma
Cape Dromedary
Tathra Head
Eden
Twofold Bay
Disaster Bay
Cape Howe
Ulladulla
Braidwood
Queanbeyan
Bendora Dam
Mt Franklin 1646 m
Batlow
Bimberi Peak 1912 m
Mt Gudgenby 1739 m
Tumut
Yass
Lake George
Goulburn
Crookwell
Mittagong
Bowral
Moss Vale
Picton
Camden
Helensburgh
Lithgow
Gosford
Windsor
Katoomba
Portland
Wyong
Muswellbrook
Singleton
Denman
Scone
Merriwa
Gloucester
Dungog
Raymond Terrace
Maitland
Kurri Kurri
Cessnock
Mt Coricudgy 1257 m
Barrington Tops 1555 m
Mt Myra 1128 m
Black Sugarloaf 1494 m
Nundle
Quirindi
Werris Creek
Tamworth
Gunnedah
Walcha
Armidale
Uralla
Round Mountain 1608 m
Point Lookout 1566 m
Mt Kaputar 1508 m
Barraba
Guyra
Inverell
Glen Innes
Emmaville
Mt Bajimba 1446 m
Tenterfield
Bonshaw
Wallangarra
Warialda
Moree
Boggabilla
Mungindi
Goondiwindi
Toowoomba
Dalby
Roma
Charleville
Cunnamulla
Thargomindah
Lightning Ridge
Goodooga
Collarenebri
Pokataroo
Walgett
Burren Junction
Wee Waa
Narrabri
Gwabegar
Boggabri
Manilla
Baradine
Coonamble
Quambone
Carinda
Byrock
Bourke
Brewarrina
Louth
Mt Gunderbooka 498 m
"Curraweena"
Cobar
Mt Nurri 419 m
Nyngan
Warren
Gilgandra
Coonabarabran
WARRUMBUNGLE RANGE
Castlereagh River
Namoi River
Barwon River
Gwydir River
Macintyre River
Dumaresq River
Clarence River
Macleay River
Manning River
Hunter River
Great Dividing Range
Liverpool Range
Binnaway
Coolah
Murrurundi
Babinda Hill 439 m
Neckarboo
"Taringo Downs"
Tottenham
Narromine
Dubbo
Trangie
Wellington
Mudgee
Gulgong
"Moolah"
"Melrose"
Tallebung
Peak Hill
Yeoval
Condobolin
Lachlan River
Roto
Lake Cargelligo
Forbes
Parkes
Molong
Orange
Mt Canobolas 1397 m
Eugowra
Bathurst
Canowindra
Hillston
Burcher
Narradhan
Rankins Springs
Booligal
West Wyalong
Grenfell
Cowra
Lake Burragorang
Blue Mountains
Barmedman
Griffith
Ardlethan
Temora
Young
Boorowa
Hay
Darlington Point
Leeton
Cootamundra
Murrumburrah
Narrandera
Coolamon
Junee
Murrumbidgee River
Yanco Creek
Wanganella
Lockhart
Wagga Wagga
Gundagai
Jerilderie
Urana
Wakool
Deniliquin
Finley
Berrigan
Rand
Culcairn
Tocumwal
Mulwala
Corowa
Albury
Mathoura
Moama
Lake Hume
Holbrook
Tumbarumba
Bimberi Peak 1912 m
Batlow
Khancoban
Mt Jagungal 2061 m
Cooma
Jindabyne
Charlotte Pass
Mt Kosciuszko 2228 m
Nimmitabel
Bega
Bombala
Delegate
Mt Imlay 886 m
Snowy River
Snowy Mountains
Great Dividing Range
Shoalhaven River
Lake Eucumbene
Lake Jindabyne
Ulladulla
Batemans Bay
Beecroft Peninsula
Jervis Bay
St Georges Head
Tathra Head
Twofold Bay
Disaster Bay
Cape Howe
N
0 50 100 150 km
SCALE 1:4 200 000
1 centimetre on the map measures 42 kilometres on the ground.
Simple Conic Projection
C 146°E D 148°E E 150°E F 152°E G 154°E
28°S 30°S 32°S 34°S 36°S
1 2 3 4 5

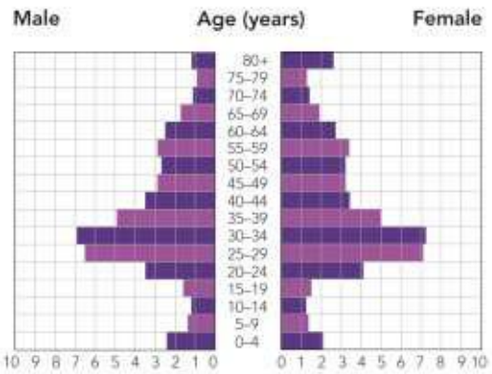
# Sydney

## SYDNEY: POPULATION CHANGE

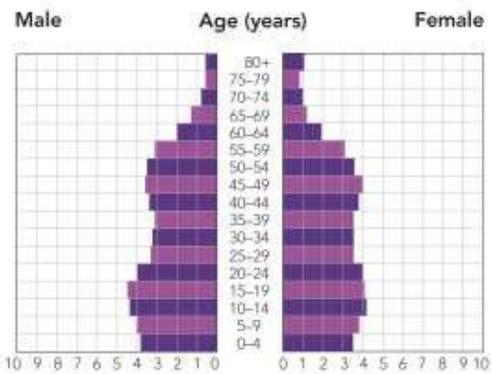



▲ Looking south towards the CBD

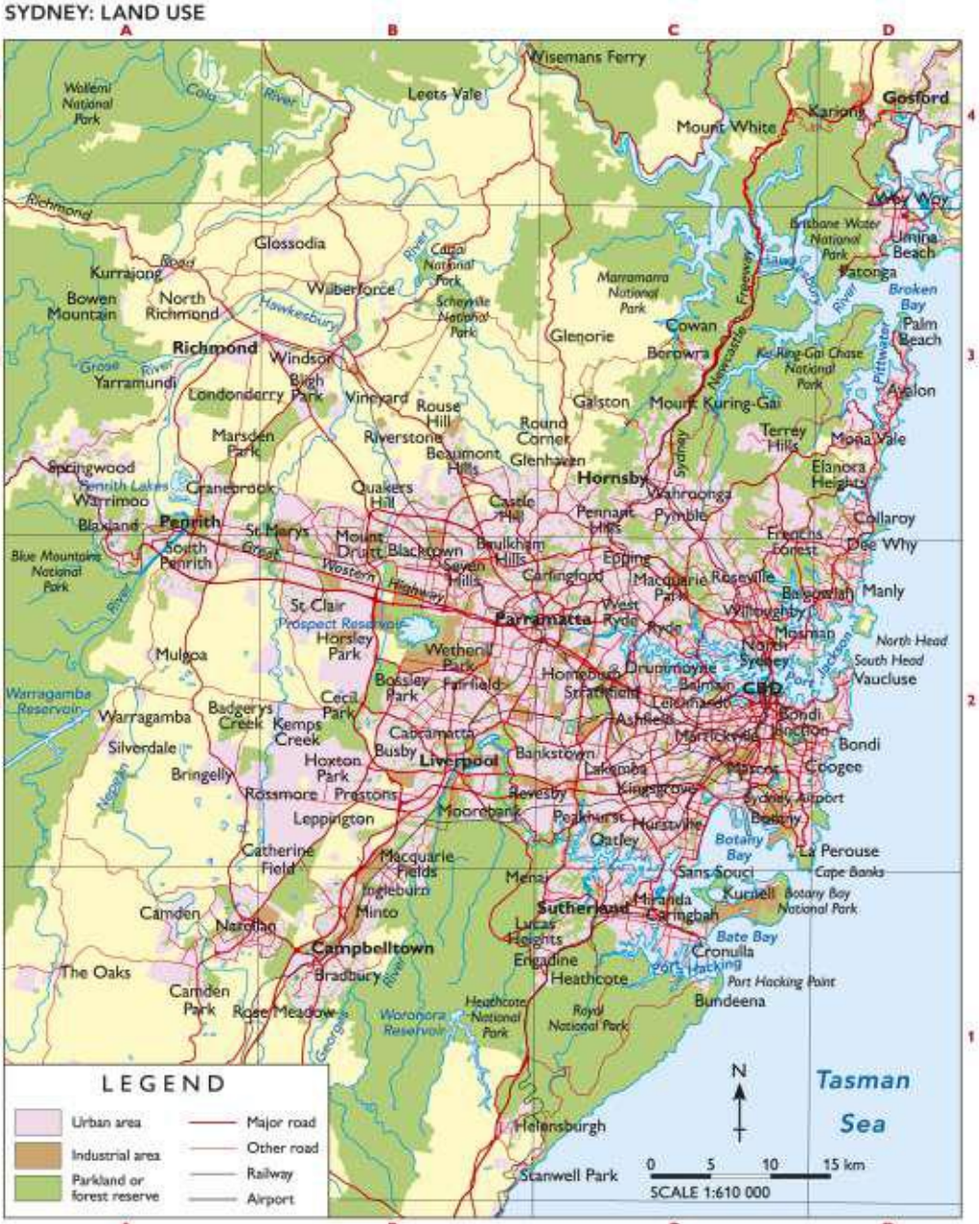
## SYDNEY CBD: POPULATION PYRAMID




## CAMPBELLTOWN: POPULATION PYRAMID




## SYDNEY: LAND USE



SYDNEY: CBD AND INNER SUBURBS

# Australian Capital Territory and Canberra

FAST FACTS

**Area:** 2351 sq km (0.3% of Australia's area)

**Population:** 379 600 (1.7% of Australia's population)

**Largest city:** Canberra 411 609 people

**Highest point:** Bimberi Peak 1912 m (page 193, E2)

**Longest river:** Molonglo 80 km (E4)

**Highest temperature:** Canberra 42.8°C

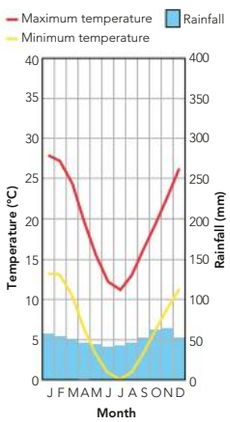
**Lowest temperature:** Mount Gudgenby –14.6°C (page 193, E2)

**Highest annual rainfall:** Bendora Dam 1830.8 mm (page 193, E2)

▲ ACT flag

▲ City of Canberra coat of arms

**CANBERRA: CLIMATE GRAPH**




▼ Canberra is Australia's national capital. It was the compromise choice for a capital city between Melbourne and Sydney, the nation's two largest cities. Parliament House sits on Capital Hill as the centre of this planned city, designed by Walter Burley Griffin in 1913.

▲ Vertical aerial photograph of Canberra

1 Australian National Botanic Gardens
2 Australian National Gallery
3 Australian National University
4 Australian War Memorial
5 Captain Cook Memorial Water Jet
6 Carillon (bell tower)
7 Central Business District
8 Commonwealth Park
9 High Court
10 Jewish Memorial Centre
11 Lake Burley Griffin
12 National Library
13 National Museum of Australia
14 National Science and Technology Centre
15 Old Parliament House
16 Parliament House
17 Prime Minister's Lodge

Australian War Memorial ►

# Victoria

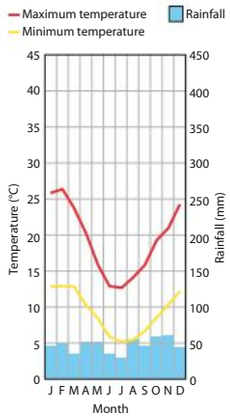
FAST FACTS

**Area:** 227 416 sq km (3% of Australia's area)
**Population:** 5 679 600 (24.8% of Australia's population)
**Largest city:** Melbourne 4 084 993 people (C2)
**Highest point:** Mount Bogong 1986 m (D2)
**Longest river:** Goulburn 654 km (C2)
**Highest temperature:** Swan Hill 49.4°C (B3)
**Lowest temperature:** Mount Hotham –12.8°C (D2)
**Highest annual rainfall:** Falls Creek 3739 mm (D2)

▲ Victorian flag

▲ Victorian Government coat of arms

**MELBOURNE: CLIMATE GRAPH**

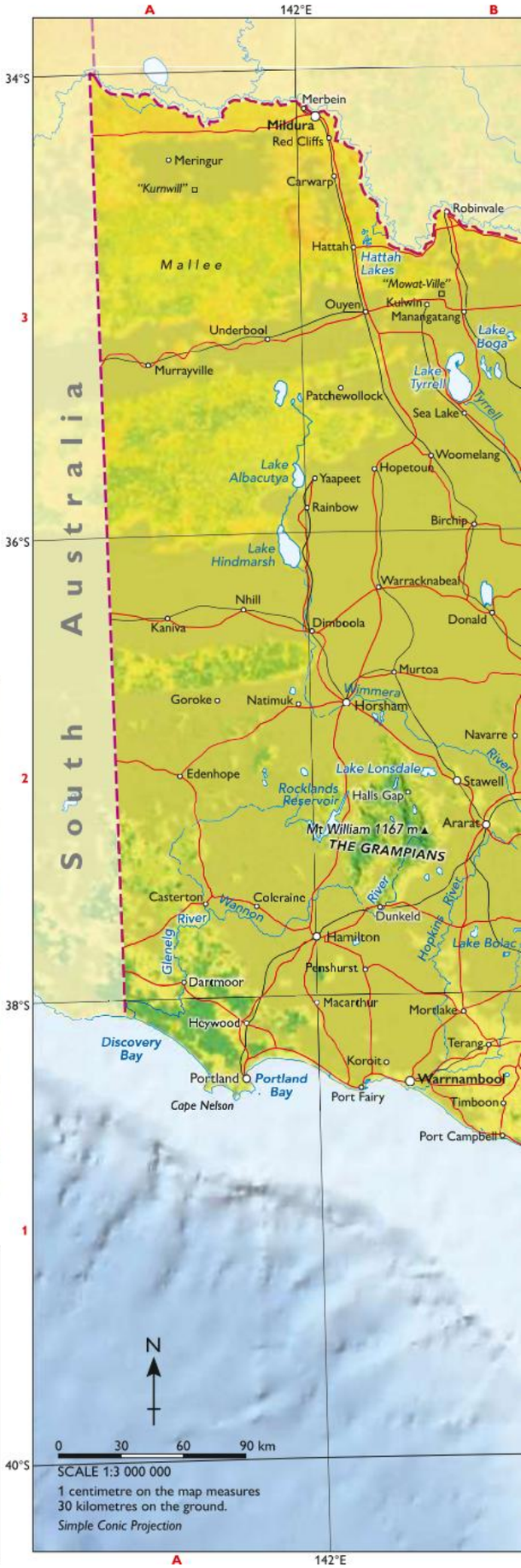



## Australian landscapes

### Beauchamp Falls – a riverine landscape (B1)

Beauchamp Falls is a waterfall on a tributary of the Aire River in the Otway Range in southern Victoria. The falls crash over a rock ledge and fall 20 metres into the large plunge pool below. Waterfalls form when rivers meet harder rock that is not easily eroded. Water spills over the harder rock and erodes the soft rock below to form a plunge pool.

▲ Beauchamp Falls in the Great Otway National Park




LEGEND

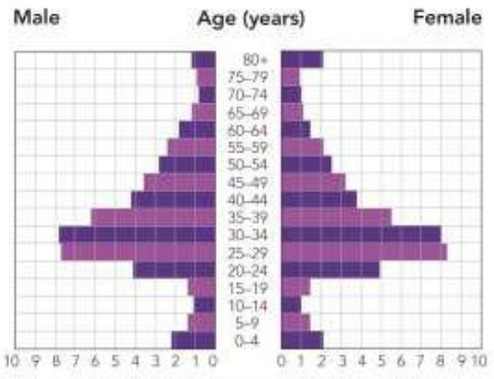
- Desert
- Grassland
- Shrubland
- Forest
- Mountains
- Cropland
- Sea floor relief
- State/territory border
- Major road
- Major railway
- Homestead
- River
- Lake
- Mt Bogong 1986 m — Mountain
- Melbourne — Over 1 000 000 people
- (No example) — 500 000 to 1 000 000 people
- Geelong — 100 000 to 500 000 people
- Ballarat — 25 000 to 100 000 people
- Morwell — 5000 to 25 000 people
- Avoca — Under 5000 people
- State capital city


144°E
C
146°E
D
148°E
E
150°E
34°S
36°S
38°S
40°S
New South Wales
Victoria
Tasmania
Bass Strait
Australian Capital Territory
Murray River
Swan Hill
Nyah West
Ultima
Koondrook
Kerang
Cohuna
Gunbower
Kow Swamp
Pyramid Hill
Boort
Wycheproof
Charlton
Loddon River
Avoca River
Wedderburn
St Arnaud
Inglewood
Bendigo
Dunolly
Maryborough
Avoca
Castlemaine
Lake Eppalock
Maldon
Cairn Curran Reservoir
Kyneton
Broadford
Clunes
Daylesford
Creswick
Beaufort
Ballarat
Mt Macedon 1011 m
Whittlesea
Sunbury
Hurstbridge
Kinglake
Marysville
Skipton
Bacchus Marsh
Melton
Melbourne
Werribee
Derrinallum
Lismore
Cressy
Lara
Geelong
Port Phillip Bay
Clifton Springs
Leopold
Camperdown
Winchelsea
Torquay
Queenscliff
Lake Corangamite
Colac
Forrest
Lorne
Barwon Heads
Ocean Grove
Point Lonsdale
Sorrento
Cape Schanck
Crib Point
French Island
Phillip Island
Cowes
Berwick
Pakenham
Cranbourne
Warragul
Moe
Morwell
Traralgon
Sale
Lake Wellington
Lake Victoria
Lake Reeve
Ninety Mile Beach
Mirboo North
Leongatha
Mt Fatigue 586 m
Foster
Wonthaggi
Yarram
Welshpool
Cape Paterson
Corner Inlet
Snake Island
Cape Liptrap
Waratah Bay
Seal Islands
Mt La Trobe 759 m
Glennie Group
Anser Group
Wilsons Promontory
Hogan Group
Lake Tyers
Bairnsdale
Stratford
Maffra
Lake Glenmaggie
Mt Baw Baw 1563 m
Upper Yarra Reservoir
Warburton
Yarra River
Healesville
Mt Tamboritha 1640 m
Jamieson
Mansfield
Lake Eildon
Mt Buller 1804 m
Mt Higginbotham 1750 m
Mt Feathertop 1922 m
Mt Hotham 1862 m
Alexandra
Yea
Kilmore
Seymour
Heathcote
Echuca
Numurkah
Yarrawonga
Lake Mulwala
Nathalia
Cobram
Shepparton
Kyabram
Mooroopna
Tatura
Rochester
Elmore
Murchison
Waranga Basin
Broken River
Benalla
Lake Mokoan
Wangaratta
Glenrowan
Boorhaman
Goulburn River
Ovens River
Ruthergien
Wodonga
Lake Hume
Tallangatta
Corryong
Mitta Mitta River
Kiewa River
Lake Dartmouth
Mount Beauty
Mt Bogong 1986 m
Falls Creek
Bright
Omeo
Mt Cobberas 1833 m
Mitchell River
Tambo River
Snowy River
Cann River
Genoa
Mt Ellery 1291 m
Cape Howe
Mallacoota Inlet
Orbost
Marlo
Lakes Entrance
Point Hicks
Cowa
Bruthen
Great Dividing Range
Snowy Mountains
Otway Range
Apollo Bay
Cape Otway
Lavers Hill
Aire River
King Island
Flinders Island

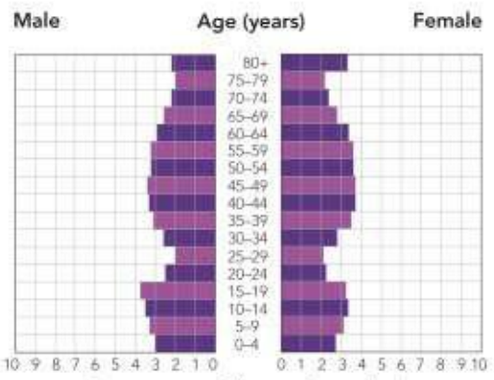
# Melbourne

## MELBOURNE: POPULATION CHANGE


## ST KILDA: POPULATION PYRAMID

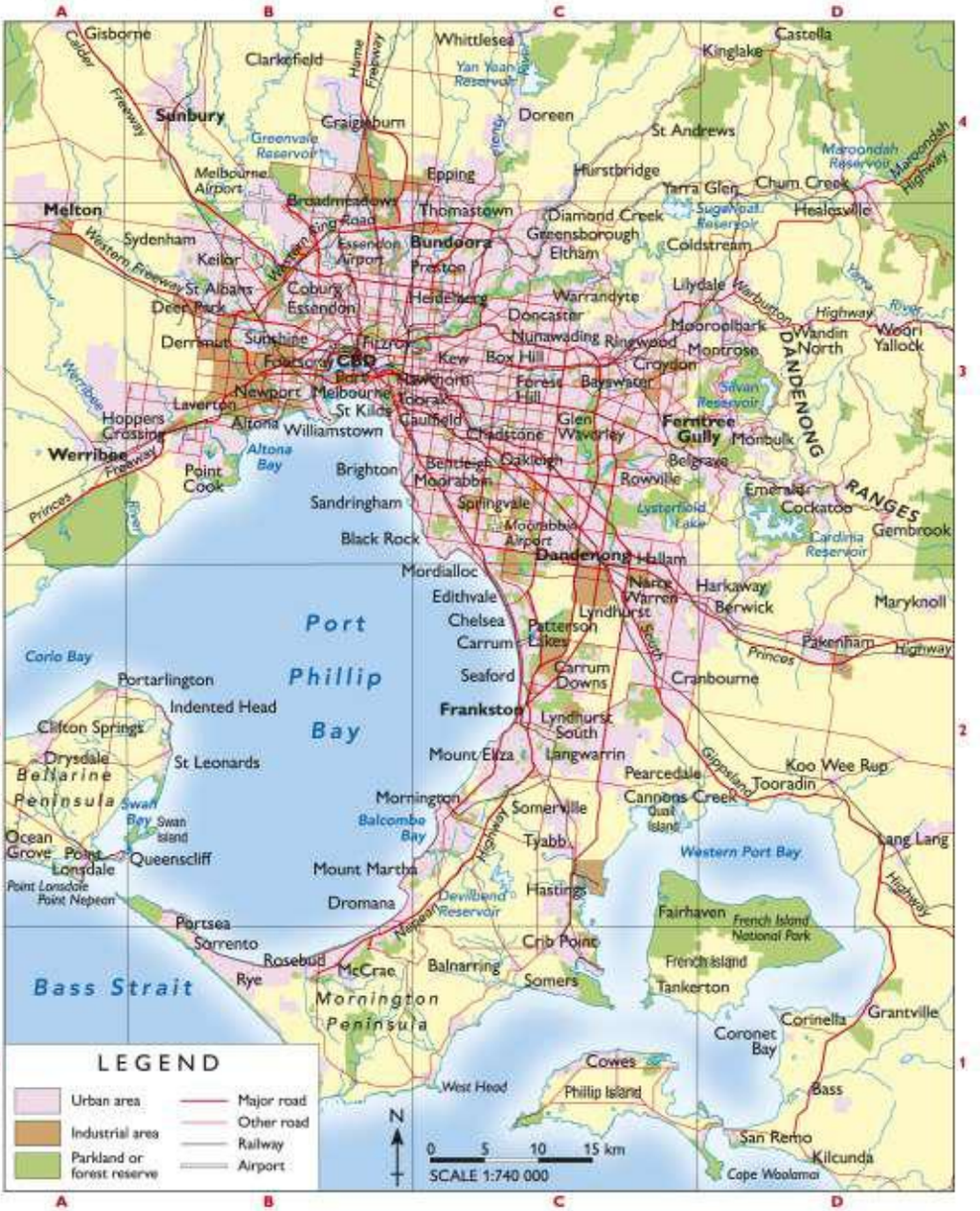



## MORNINGTON: POPULATION PYRAMID

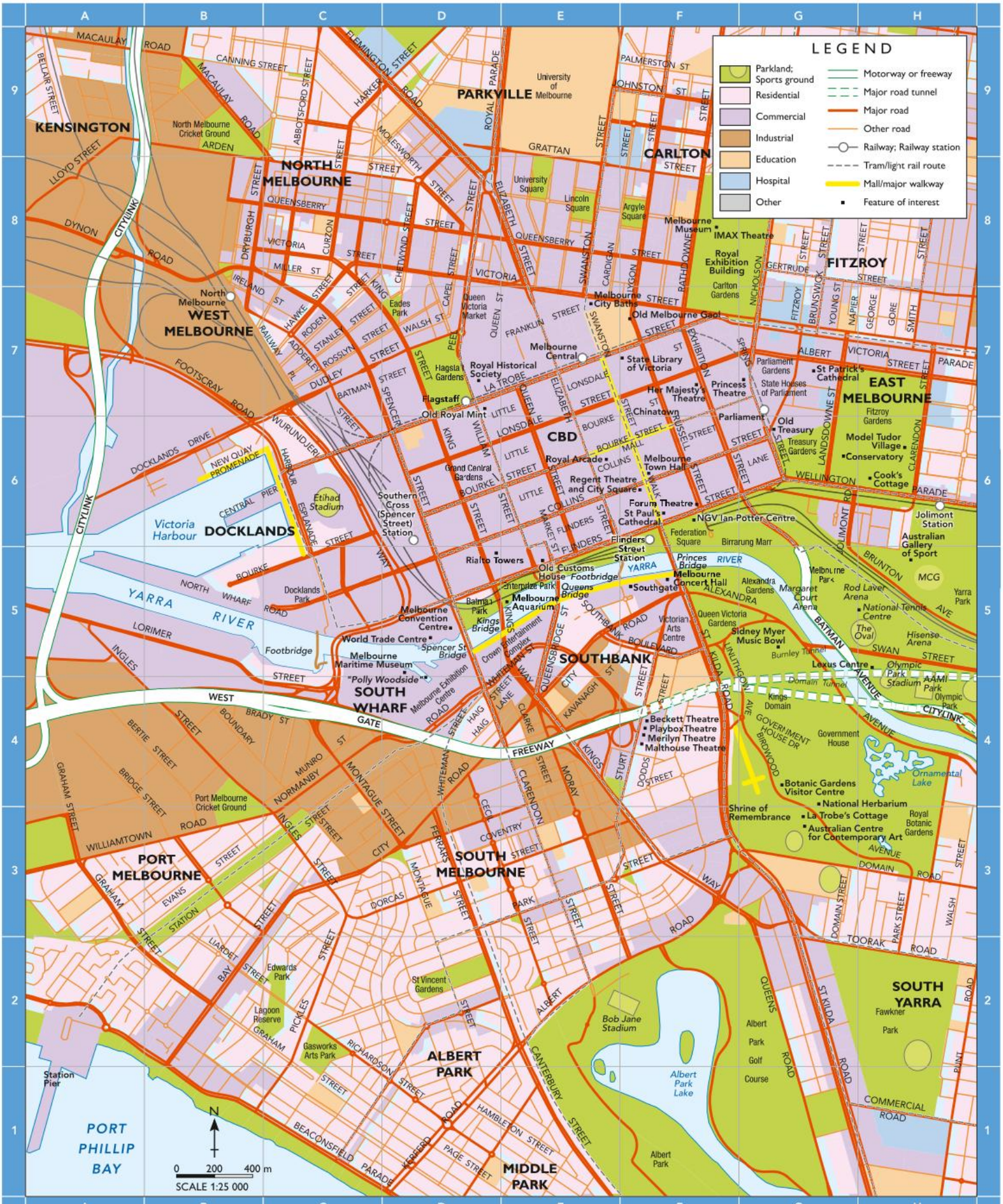



▲ Looking west over Melbourne's CBD

## MELBOURNE: LAND USE



MELBOURNE: CBD AND INNER SUBURBS



# Tasmania

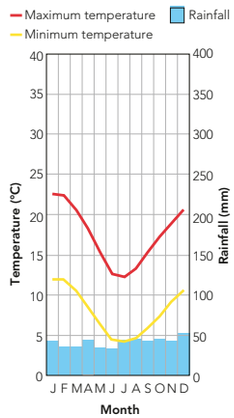
FAST FACTS

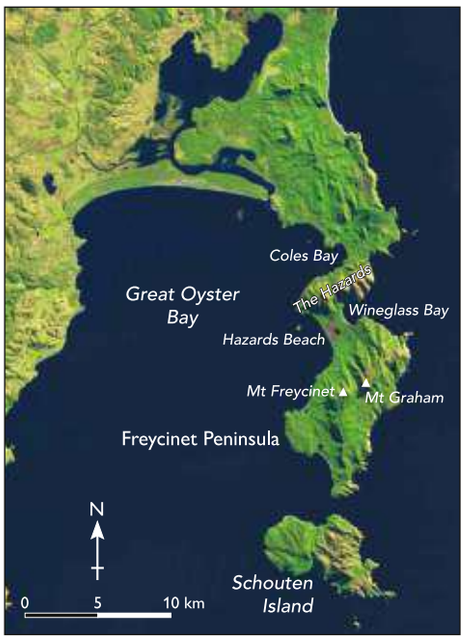
**Area:** 68 401 sq km (0.9% of Australia's area)
**Population:** 512 400 (2.2% of Australia's population)
**Largest city:** Hobart 205 530 people (E2)
**Highest point:** Mount Ossa 1617 m (D3)
**Longest river:** South Esk 245 km (E3)
**Highest temperature:** Hobart 40.8°C (E2)
**Lowest temperature:** Tarraleah –13°C (D2)
**Highest annual rainfall:** Lake Margaret 4504 mm (C3)

▲ Tasmanian flag

▲ Tasmanian Government coat of arms

**HOBART: CLIMATE GRAPH**



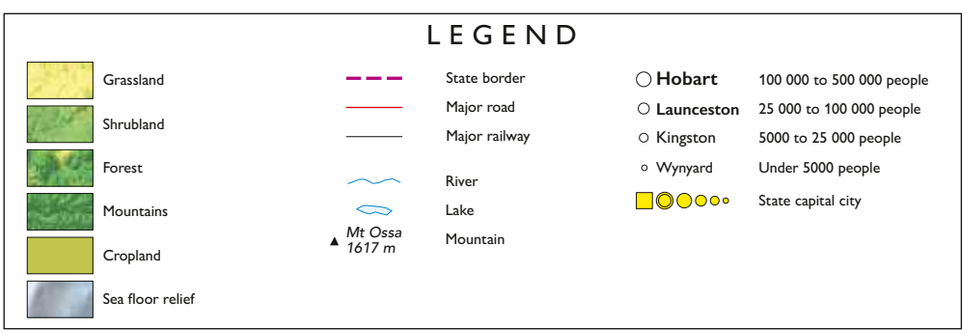

▲ Satellite image of Freycinet Peninsula and surrounds

## Australian landscapes

### Freycinet Peninsula – a coastal landscape (F2)

Freycinet Peninsula was formed over 400 million years ago. The peninsula is made up of two sets of eroded granite mountains – The Hazards and Mount Graham/Mount Freycinet – joined by a sand isthmus. An isthmus is narrow strip of land connecting two larger land areas, usually with water on either side. The low-lying isthmus is built from eroded material from the mountains.

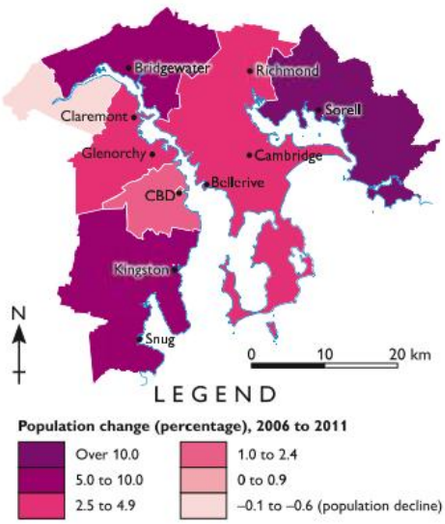
▲ The white sandy beach and clear waters of Wineglass Bay are located on the seaward side of the isthmus. Wineglass Bay is a popular tourist attraction and considered one of the best beaches in the world.




Victoria
Hogan Group
Kent Group
Deal Island
Curtis Group
Cape Wickham
King Island
Currie
Naracoopa
Grassy
Bass Strait
Inner Sister Island
Outer Sister Island
Palana
Flinders Island
Furneaux
Emita
Prime Seal Island
Whitemark
Lady Barron
Chappell Islands Group
Mt Munro 716 m
Cape Barren Island
Clarke Island
Albatross Island
Three Hummock Island
Hunter Island
Walker Island
Robbins Island
Cape Grim
Woolnorth
Highfield Point
Stanley
Smithton
Port Latta
Marrawah
West Point
Table Cape
Wynyard
Roger River
Burnie
Penguin
Devonport
George Town
Bell Bay
Ulverstone
Beauty Point
Beaconsfield
Latrobe
Railton
Sheffield
Waratah
Black Bluff 1339 m
Savage River
Sandy Cape
Cradle Valley
Cradle Mountain 1420 m
Barn Bluff 1559 m
Rosebery
Zeehan
Eldon Peak 1439 m
Lake Margaret
Queenstown
Gormanston
Strahan
Cape Sorell
Frenchmans Cap 1444 m
Macquarie Harbour
Point Hibbs
Mt Field West 1439 m
Lake Gordon
Strathgordon
Elliott Bay
Nye Bay
Lake Pedder
Mt Picton 1327 m
Port Davey
Bathurst Harbour
South West Cape
Cox Bight
Maatsuyker Island
South East Cape
Pedra Branca
D'Entrecasteaux Channel
Hastings
Dover
Geeveston
Huon
Franklin
Huonville
Snug
Cygnet
Maydena
Boyer
New Norfolk
Hobart
Mt Wellington 1269 m
Kingston
Bridgewater
Richmond
Sorell
Cambridge
Nubeena
Port Arthur
Storm Bay
Tasman Peninsula
Cape Pillar
North Bruny
South Bruny
Alonnah
Eaglehawk Neck
Marion Bay
Forestier Peninsula
Maria Island
Orford
Triabunna
Quoin Mountain 900 m
Melton Mowbray
Apsley
Lake Tiberias
Bothwell
Oatlands
Tarraleah
Wayatinah
Derwent Bridge
Lake St Clair
Bronte Park
Lake King William
Lake Echo
Waddamana
Ouse
Hamilton
Lake Sorell
Tunbridge
Lake Crescent
Tooms Lake
Great Lake
Arthurs Lake
Lake Leake
Swansea
Great Oyster Bay
Coles Bay
Freycinet Peninsula
Schouten Island
Mt Ossa 1617 m
Mersey River
Lake Augusta
Poatina
Conara
Campbell Town
Ross
Macquarie River
South Esk River
Maclean Bay
Bicheno
Launceston
Perth
Longford
Cressy
Evandale
Deloraine
Westbury
Meander River
Tamar River
Mt Barrow 1413 m
Mathinna
Legges Tor 1573 m
Stacks Bluff 1527
Fingal
Rossarden
Scamander
St Helens
Cullenswood
St Marys
George River
Ringarooma River
Scottsdale
Derby
Herrick
Bridport
Gladstone
Eddystone Point
Waterhouse Island
Ringarooma Bay
Cape Portland
Banks Strait
Noland Bay
Anderson Bay
Tasmania
INDIAN OCEAN
TASMAN SEA
N
0 25 50 75 km
SCALE 1:2 300 000
1 centimetre on the map measures 23 kilometres on the ground.
Universal Transverse Mercator Projection
39°S
40°S
41°S
42°S
43°S
144°E
145°E
146°E
147°E
148°E
A
B
C
D
E
F
1
2
3
4
5

# Hobart

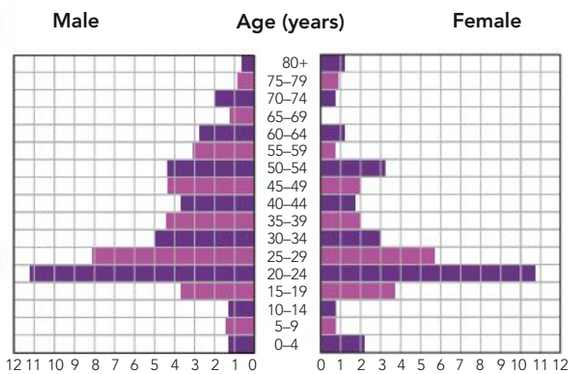
## HOBART: POPULATION CHANGE



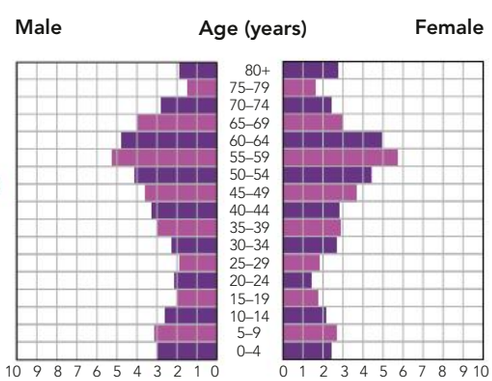

Looking west across the CBD ▶

## HOBART: LAND USE


## HOBART CBD: POPULATION PYRAMID




## GLENORCHY: POPULATION PYRAMID



HOBART: CBD AND INNER SUBURBS

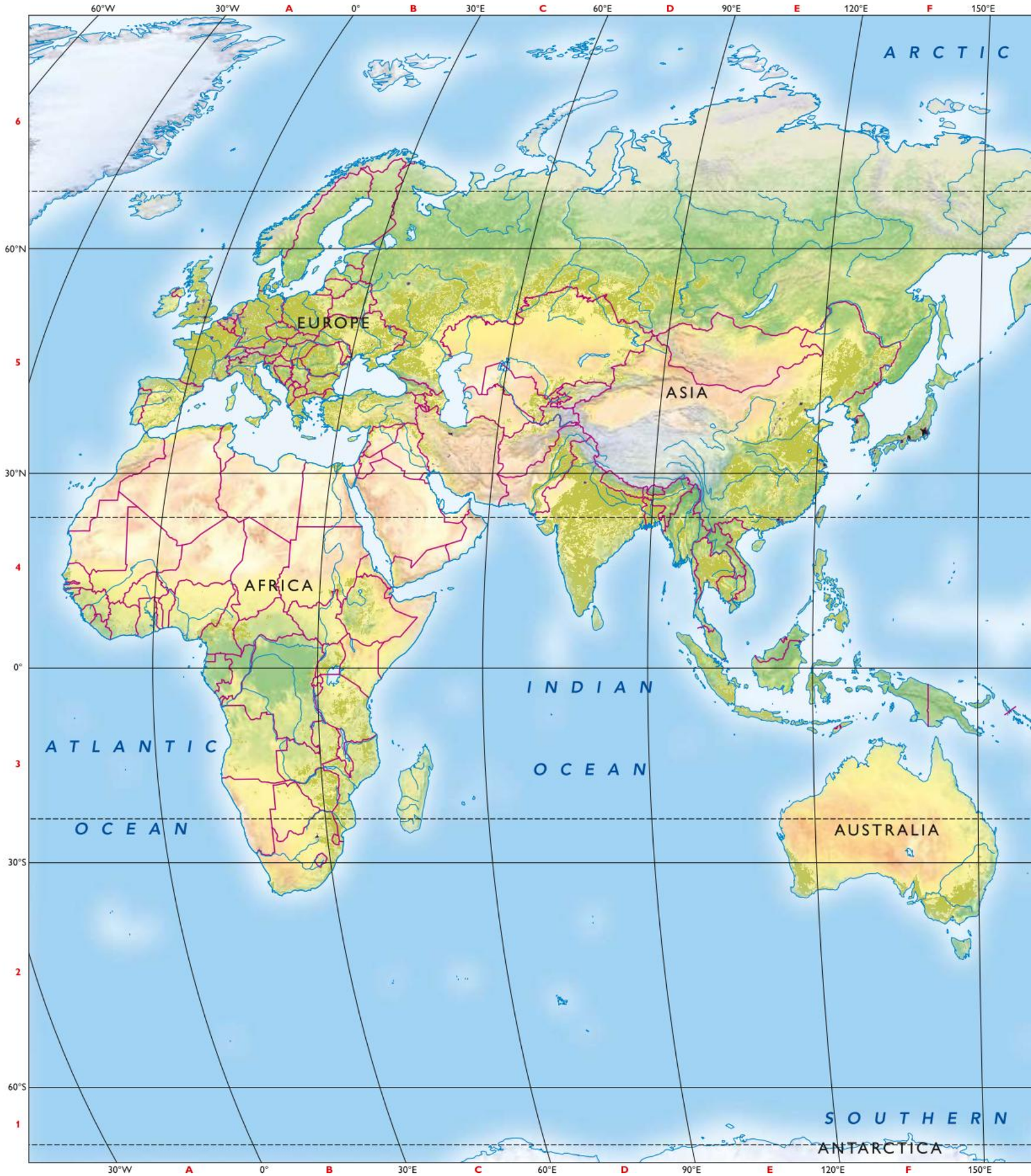



# SECTION 4
# World



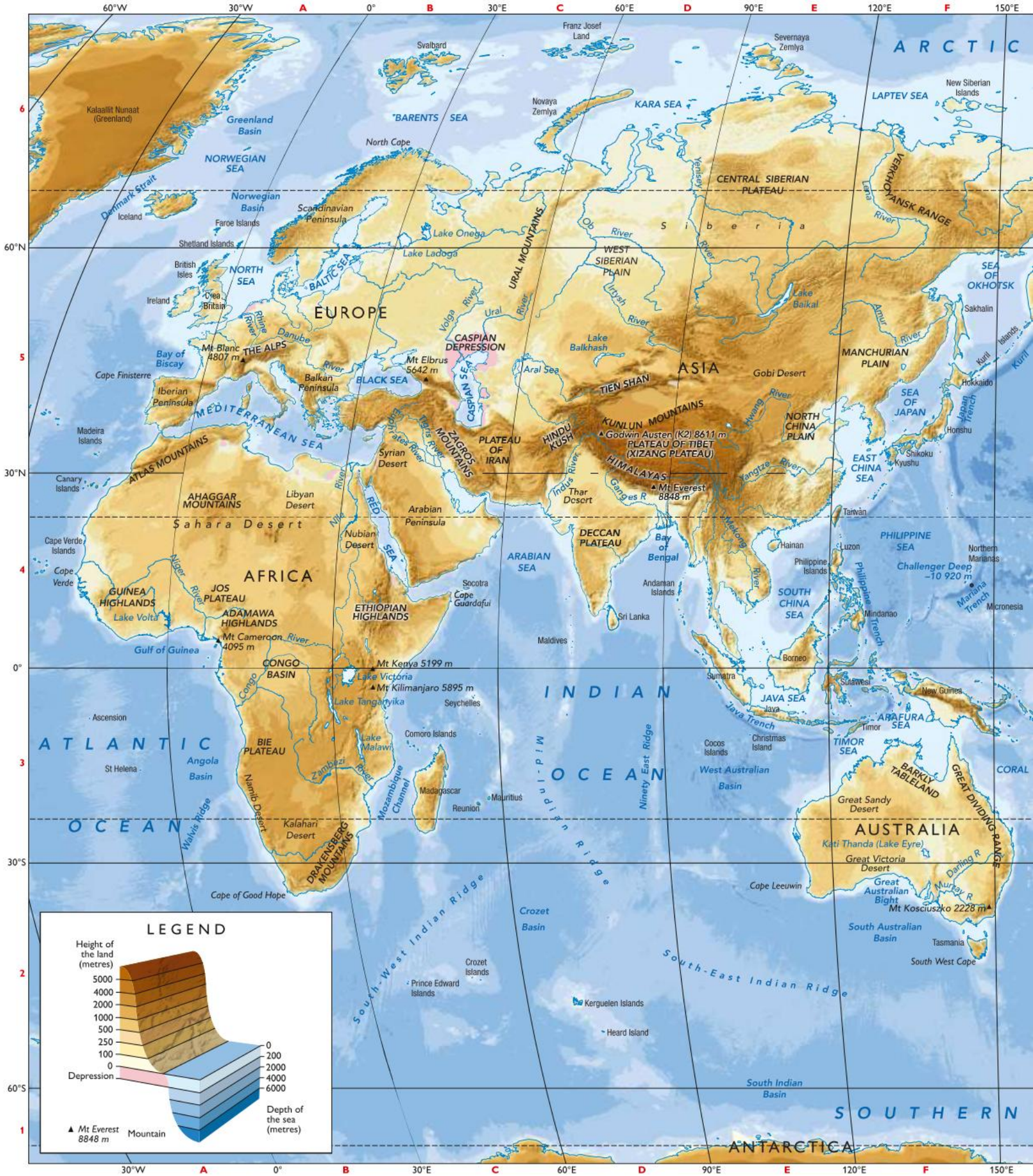

This section contains detailed reference maps of the world, continents and world regions. Key facts, case studies and geographical data are also provided for each world region.

# World: Environments




G
180°
H
150°W
I
120°W
J
90°W
K
60°W
L
30°W
M
0°
OCEAN
NORTH AMERICA
ATLANTIC
OCEAN
PACIFIC
OCEAN
SOUTH AMERICA
OCEAN
Arctic Circle
Tropic of Cancer
Equator
Tropic of Capricorn
Antarctic Circle
6
5
4
3
2
1
LEGEND
Desert
Grassland
Savannah/shrubland
Forest
Highland
Tundra
Ice cap
Mountains
Cropland
Urban area
Country border
N
0
1000
2000
3000 km
SCALE 1:75 000 000 at 40°N and S
1 centimetre on the map measures
750 kilometres on the ground.
Modified Times Projection

# World: Physical




G 180° H 150°W I 120°W J 90°W K 60°W L 30°W M 0° N 30°E
OCEAN
EAST SIBERIAN SEA
CHUKCHI SEA
BEAUFORT SEA
Baffin Bay
Ellesmere Island
Queen Elizabeth Islands
Kalaallit Nunaat (Greenland)
Banks Island
Victoria Island
Baffin Island
Chukot Peninsula
Bering Strait
BROOKS RANGE
Arctic Circle
Yukon River
Mt McKinley 6194 m
ALASKA RANGE
MACKENZIE MOUNTAINS
Great Bear Lake
Great Slave Lake
Davis Strait
Iceland
BERING SEA
Aleutian Basin
Gulf of Alaska
Kodiak Island
Kamchatka Peninsula
Aleutian Islands
Aleutian Trench
Queen Charlotte Islands (Haida Gwaii)
Vancouver Island
ROCKY MOUNTAINS
Lake Athabasca
Hudson Bay
Ungava Peninsula
LABRADOR SEA
NORTH AMERICA
Lake Winnipeg
Lake Superior
Lake Huron
Lake Michigan
Missouri River
St Lawrence River
Newfoundland
Grand Banks
Great Salt Lake
GREAT SIERRA BASIN NEVADA
Cape Mendocino
Cape Sable
Cape Cod
ATLANTIC OCEAN
Ohio R.
APPALACHIAN MOUNTAINS
Cape Hatteras
Azores
Ridge
North American Basin
Rio Grande
Guadalupe
Lower California
Gulf of Mexico
Tropic of Cancer
PACIFIC OCEAN
Hawaiian Islands
Mauna Loa 4169 m
Yucatan Peninsula
Cuba
West Indies
Canary Basin
Jamaica
Hispaniola
Cape Verde Islands
Middle America Trench
CARIBBEAN SEA
Lesser Antilles
Marshall Islands
Guatemala Basin
Trinidad
Guinea Basin
GUIANA HIGHLANDS
Kiribati
Equator
Galapagos Islands
Chimborazo 6267 m
Amazon River
AMAZON BASIN
Cape São Roque
Solomon Islands
Tuvalu
Marquesas Islands
Huascaran 6768 m
ANDES
SOUTH AMERICA
PLATEAU OF MATO GROSSO
Vanuatu
Samoa
Fiji
Cook Islands
Tuamotu Archipelago
Lake Titicaca
Brazil Basin
SEA
Tonga
New Caledonia
Society Islands
Peru Basin
Atacama Desert
Nazca Ridge
Tropic of Capricorn
Tonga Trench
East Pacific Ridge
Rapa Nui (Easter Island)
Llullaillaco 6723 m
BRAZILIAN HIGHLANDS
Kermadec Trench
Aconcagua 6962 m
TASMAN SEA
North Island
Pampas
Argentine Basin
Aoraki/Mt Cook 3754 m
Chatham Islands
South Island
South-West Pacific Basin
Patagonian Desert
Falkland Islands
South-East Pacific Basin
South Georgia
Macquarie Island
Cape Horn
SCOTIA SEA
Drake Passage
South Sandwich Islands
0 1000 2000 3000 km
N
SCALE 1:75 000 000 at 40°N and S
1 centimetre on the map measures 750 kilometres on the ground.
Modified Times Projection
South Orkney Islands
Antarctic Peninsula
Antarctic Circle
OCEAN
6
60°N
5
4
30°N
3
0°
30°S
2
60°S
1

# World: Political

1 **Luxembourg** – Luxembourg
2 **Netherlands** – Amsterdam
3 **Belgium** – Brussels
4 **Switzerland** – Bern
5 **Andorra** – Andorra-la-Vella
6 **Monaco** – Monaco
7 **Liechtenstein** – Vaduz
8 **San Marino** – San Marino
9 **Vatican City**
10 **Czech Republic** – Prague
11 **Slovakia** – Bratislava
12 **Austria** – Vienna
13 **Hungary** – Budapest
14 **Moldova** – Kishinev
15 **Slovenia** – Ljubljana
16 **Croatia** – Zagreb
17 **Bosnia and Herzegovina** – Sarajevo
18 **Montenegro** – Podgorica
19 **Serbia** – Belgrade
20 **Kosovo** – Pristina
21 **Macedonia*** – Skopje
22 **Albania** – Tirane
23 **Malta** – Valletta
24 **Lebanon** – Beirut
25 **Israel** – Jerusalem
26 **Kuwait** – Kuwait
27 **Bahrain** – Manama
28 **Qatar** – Doha
29 **United Arab Emirates** – Abu Dhabi
30 **Senegal** – Dakar
31 **Gambia** – Banjul
32 **Guinea Bissau** – Bissau
33 **Sierra Leone** – Freetown
34 **Ivory Coast** – Yamoussoukro
35 **Ghana** – Accra
36 **Togo** – Lome
37 **Benin** – Porto-Novo
38 **Equatorial Guinea** – Malabo
39 **Sao Tome and Principe** – Sao Tome
40 **Rwanda** – Kigali
41 **Burundi** – Bujumbura
42 **Belize** – Belmopan
43 **Jamaica** – Kingston
44 **St Kitts and Nevis** – Basseterre
45 **Antigua and Barbuda** – St John's
46 **Dominica** – Roseau
47 **St Lucia** – Castries
48 **Barbados** – Bridgetown
49 **St Vincent and the Grenadines** – Kingstown
50 **Grenada** – St George's

** Former Yugoslav Republic of Macedonia*


G 180° H 150°W I 120°W J 90°W K 60°W L 30°W M 0° N 30°E
OCEAN
Kalaallit Nunaat (Greenland) (Denmark)
Arctic Circle
Alaska (USA)
Reykjavik
ICELAND
CANADA
Ottawa
St Pierre and Miquelon (France)
ATLANTIC
UNITED STATES OF AMERICA
Washington DC
Azores (Portugal)
Bermuda (UK)
OCEAN
PACIFIC
BAHAMAS
Nassau
Tropic of Cancer
Hawaii (USA)
Socorro Island (Mexico)
MEXICO
Mexico City
Havana
CUBA
HAITI
Port-au-Prince
DOMINICAN REPUBLIC
Santo Domingo
CAPE VERDE
Praia
Clarion Island (Mexico)
GUATEMALA
Guatemala City
HONDURAS
Tegucigalpa
EL SALVADOR
San Salvador
NICARAGUA
Managua
COSTA RICA
San Jose
PANAMA
Panama City
Clipperton (France)
TRINIDAD AND TOBAGO
Port of Spain
Caracas
VENEZUELA
GUYANA
Georgetown
Paramaribo
French Guiana (France)
SURINAME
Bogota
COLOMBIA
Quito
ECUADOR
Galapagos Islands (Ecuador)
Equator
MARSHALL ISLANDS
Majuro
South Tarawa
Yaren
NAURU
KIRIBATI
SOLOMON ISLANDS
Honiara
Funafuti
TUVALU
PERU
Lima
BRAZIL
Brasilia
SAMOA
Apia
American Samoa (USA)
VANUATU
Port Vila
FIJI
Suva
NIUE
Alofi
TONGA
Nukualofa
COOK ISLANDS
Avarua
New Caledonia (France)
French Polynesia (France)
La Paz
BOLIVIA
Sucre
PARAGUAY
Asuncion
Tropic of Capricorn
Pitcairn Island (UK)
Rapa Nui (Easter Island) (Chile)
San Felix (Chile)
CHILE
Norfolk Island (Australia)
International Date Line
Juan Fernandez Islands (Chile)
Santiago
URUGUAY
Montevideo
Buenos Aires
ARGENTINA
Wellington
NEW ZEALAND
Chatham Islands (New Zealand)
Auckland Islands (New Zealand)
Falkland Islands (UK)
South Georgia (UK)
LEGEND
Country border
Disputed country border
Country capital city
Azores (Portugal)
Dependency
N
0 1000 2000 3000 km
SCALE 1:75 000 000 at 40°N and S
1 centimetre on the map measures 750 kilometres on the ground.
Modified Times Projection
OCEAN
ANTARCTICA
Antarctic Circle
60°S
30°S
Equator
30°N
60°N
6
5
4
3
2
1

# Oceania: Political

FAST FACTS

## World records

### Largest ocean

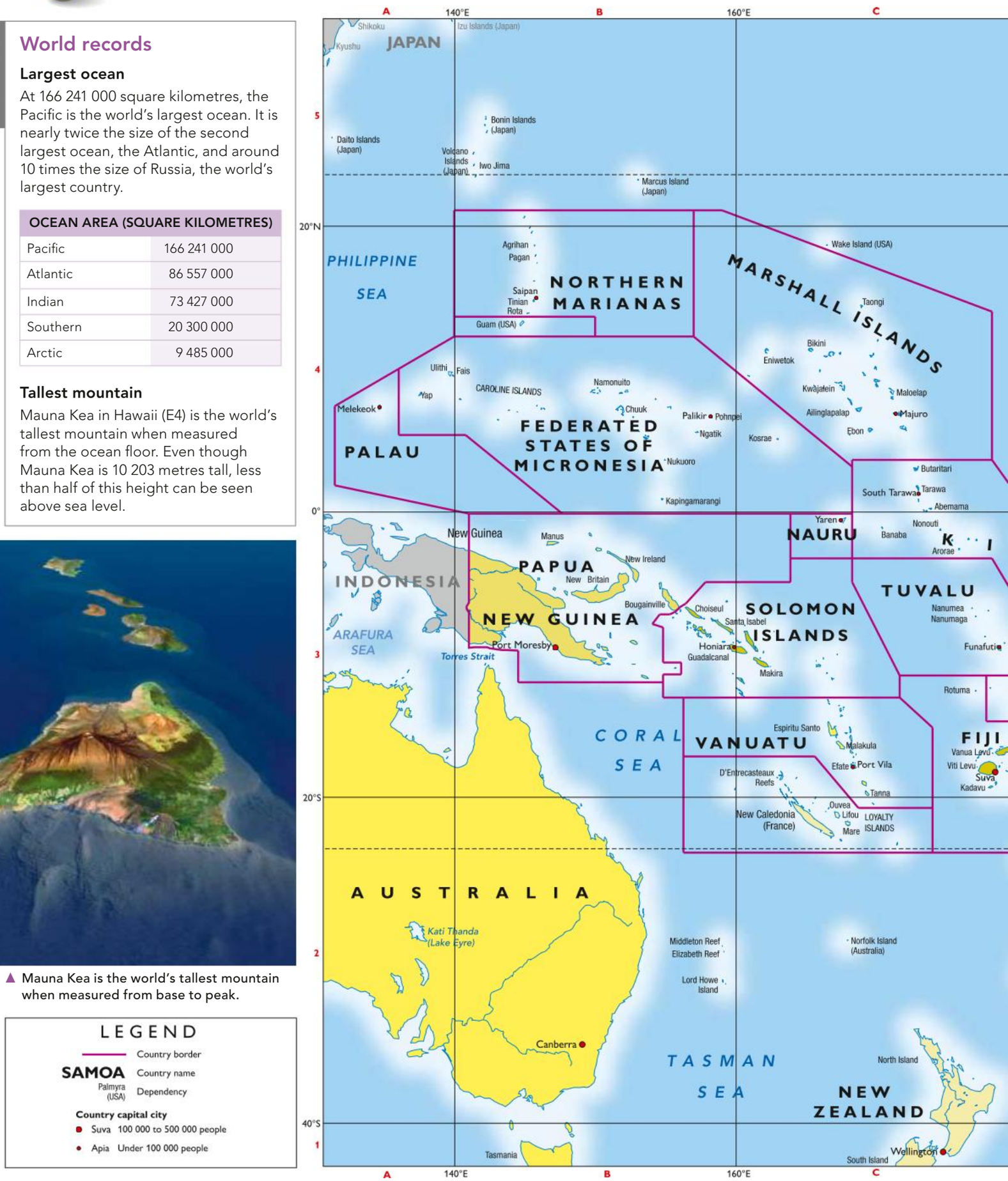
At 166 241 000 square kilometres, the Pacific is the world's largest ocean. It is nearly twice the size of the second largest ocean, the Atlantic, and around 10 times the size of Russia, the world's largest country.

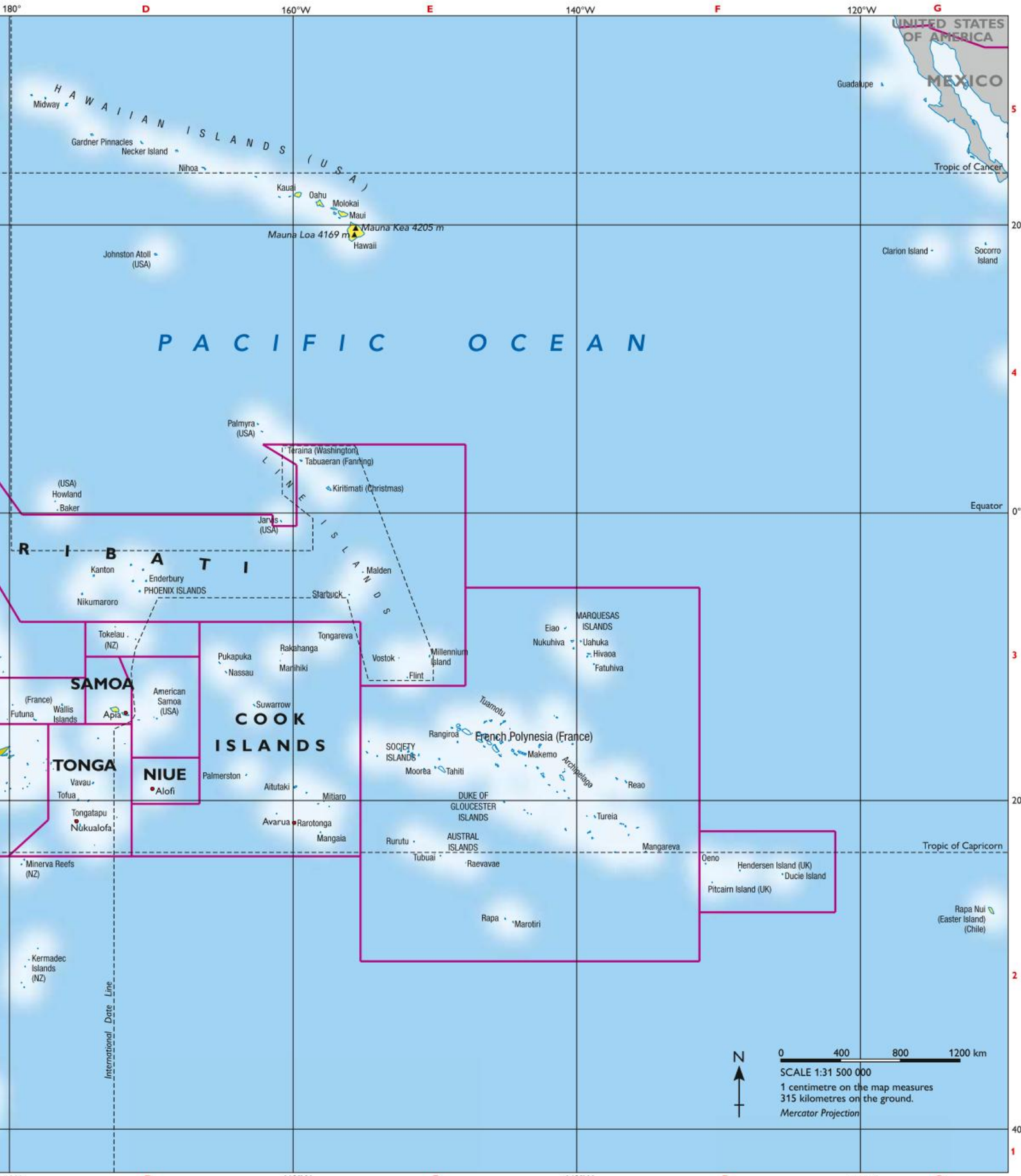
| OCEAN AREA (SQUARE KILOMETRES) | |
|---|---|
| Pacific | 166 241 000 |
| Atlantic | 86 557 000 |
| Indian | 73 427 000 |
| Southern | 20 300 000 |
| Arctic | 9 485 000 |

### Tallest mountain

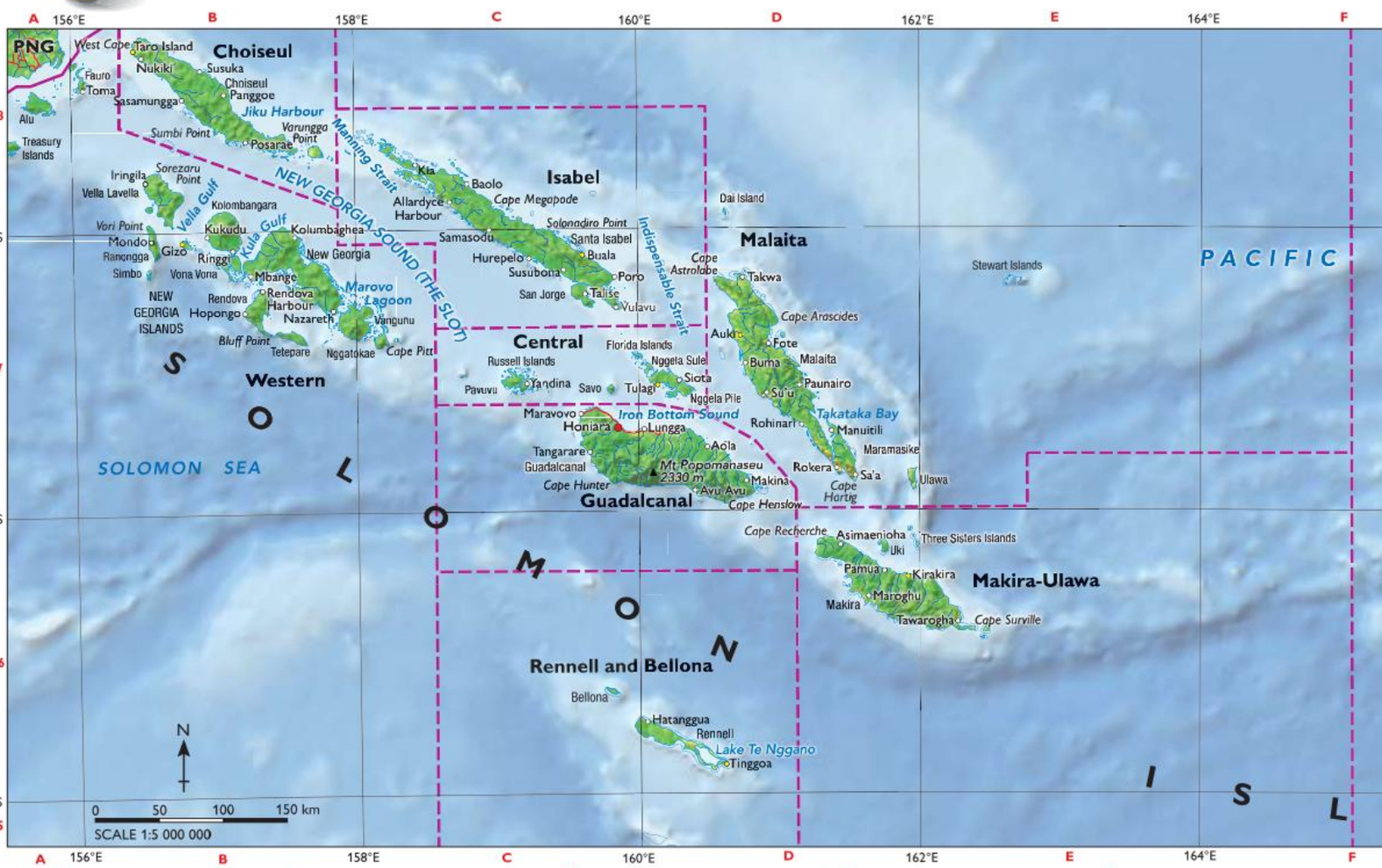
Mauna Kea in Hawaii (E4) is the world's tallest mountain when measured from the ocean floor. Even though Mauna Kea is 10 203 metres tall, less than half of this height can be seen above sea level.

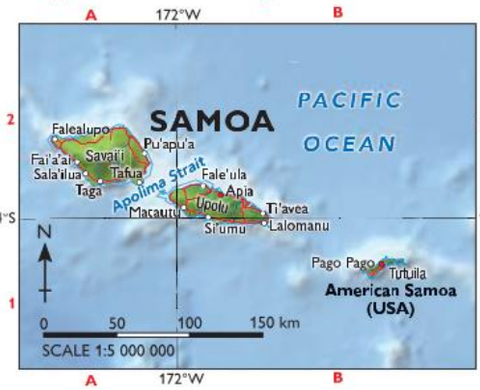
▲ Mauna Kea is the world's tallest mountain when measured from base to peak.

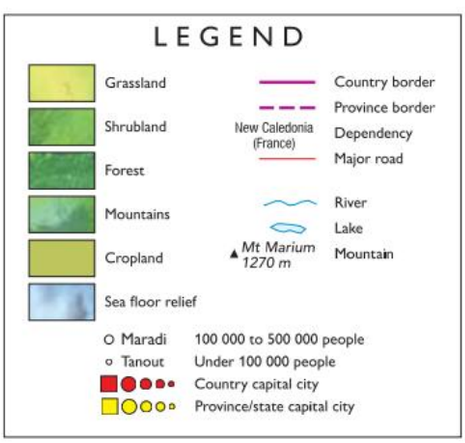


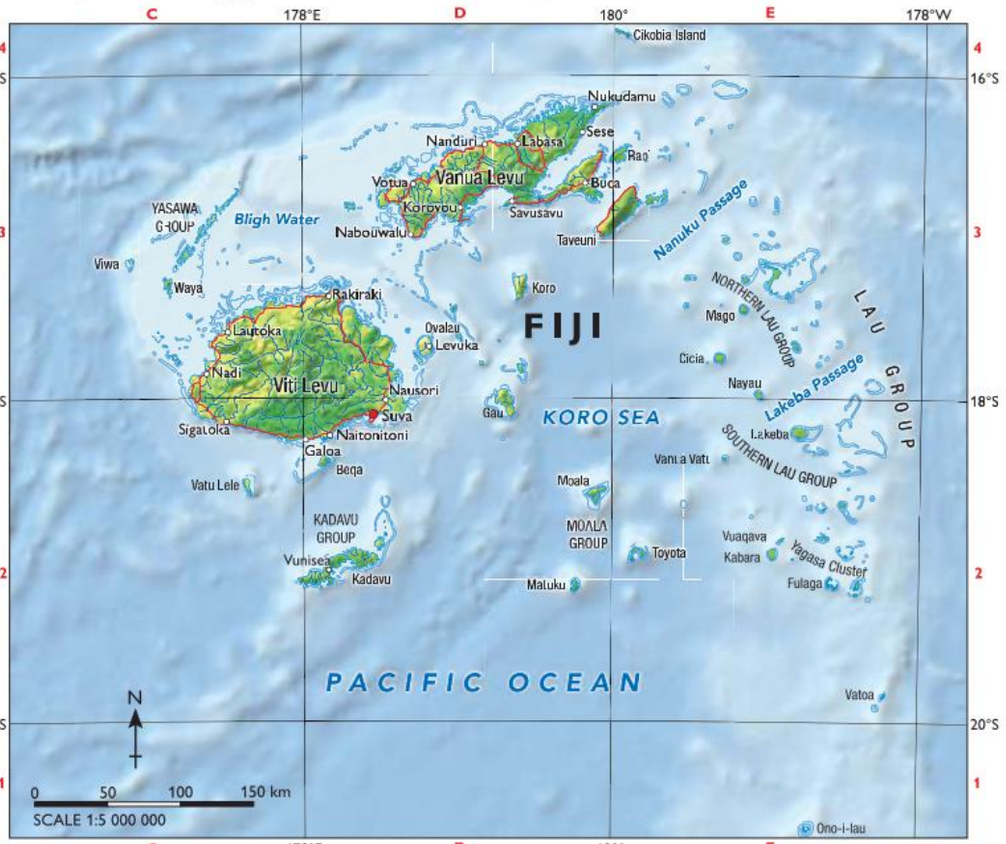

180°
D
160°W
E
140°W
F
120°W
G
UNITED STATES OF AMERICA
MEXICO
Guadalupe
Midway
HAWAIIAN ISLANDS (USA)
Gardner Pinnacles
Necker Island
Nihoa
Kauai
Oahu
Molokai
Maui
Mauna Kea 4205 m
Mauna Loa 4169 m
Hawaii
Tropic of Cancer
20°N
Johnston Atoll (USA)
Clarion Island
Socorro Island
PACIFIC OCEAN
4
Palmyra (USA)
Teraina (Washington)
Tabuaeran (Fanning)
Kiritimati (Christmas)
(USA) Howland
Baker
Jarvis (USA)
Equator
0°
LINE ISLANDS
RIBATI
Kanton
Enderbury
PHOENIX ISLANDS
Nikumaroro
Malden
Starbuck
Vostok
Millennium Island
Flint
MARQUESAS ISLANDS
Eiao
Nukuhiva
Uahuka
Hivaoa
Fatuhiva
Tokelau (NZ)
Tongareva
Pukapuka
Rakahanga
Manihiki
Nassau
3
SAMOA
American Samoa (USA)
(France) Futuna
Wallis Islands
Apia
Suwarrow
COOK ISLANDS
Tuamotu
Rangiroa
French Polynesia (France)
SOCIETY ISLANDS
Makemo
Archipelago
Moorea
Tahiti
Reao
TONGA
NIUE
Alofi
Palmerston
Aitutaki
Mitiaro
DUKE OF GLOUCESTER ISLANDS
Vavau
Tofua
Tongatapu
Nukualofa
Avarua
Rarotonga
Mangaia
Tureia
20°S
Rurutu
AUSTRAL ISLANDS
Mangareva
Tropic of Capricorn
Tubuai
Raevavae
Oeno
Hendersen Island (UK)
Ducie Island
Pitcairn Island (UK)
Minerva Reefs (NZ)
Rapa
Marotiri
Rapa Nui (Easter Island) (Chile)
Kermadec Islands (NZ)
International Date Line
2
40°S
1
N
0
400
800
1200 km
SCALE 1:31 500 000
1 centimetre on the map measures
315 kilometres on the ground.
Mercator Projection

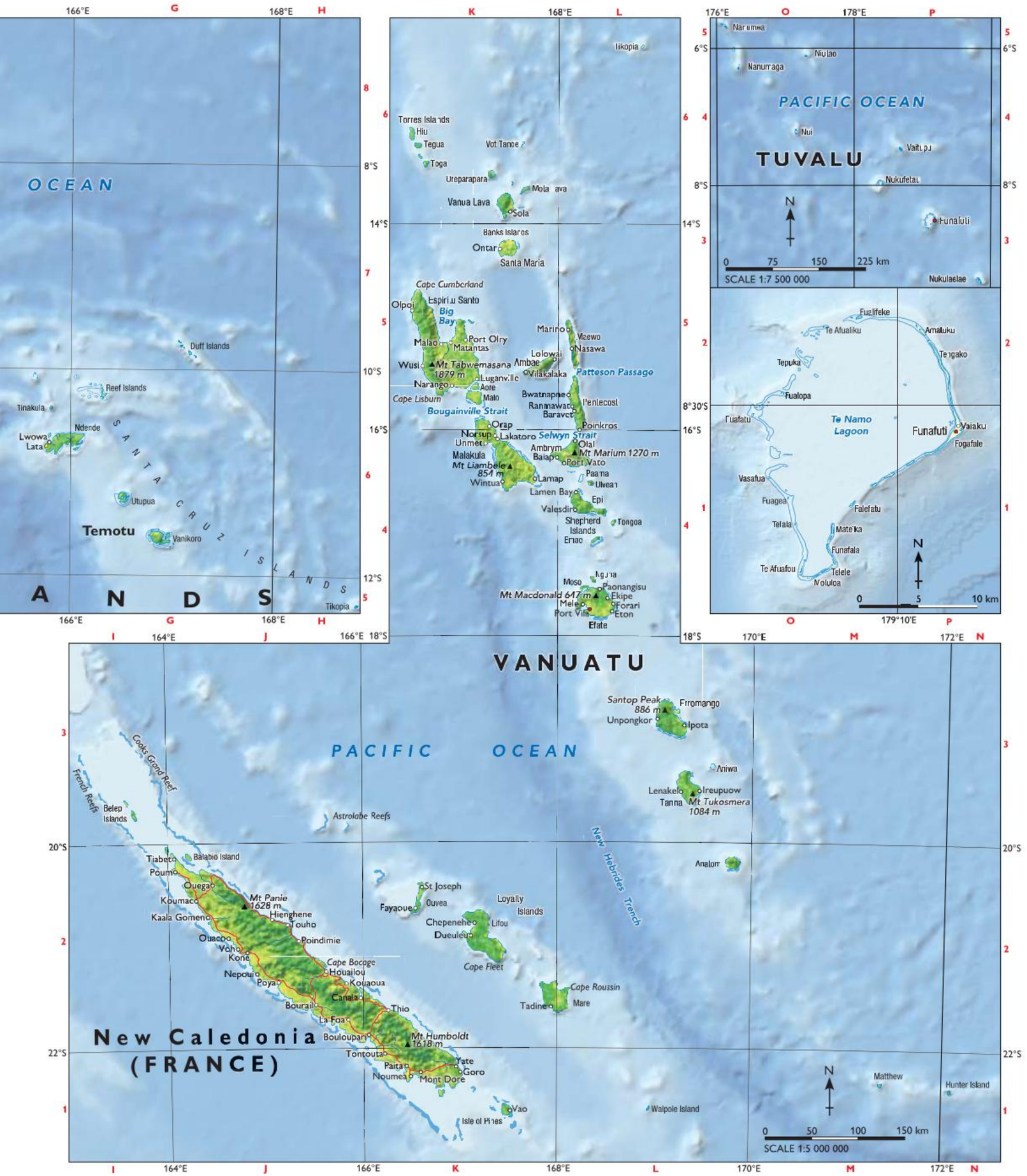
# Pacific Islands




OCEAN
Duff Islands
Reef Islands
Tinakula
Ndende
Lwowa
Lata
SANTA CRUZ ISLANDS
Utupua
Temotu
Vanikoro
A N D S
Tikopia
Torres Islands
Hiu
Tegua
Vot Tanoe
Toga
Ureparapara
Mota Lava
Vanua Lava
Sola
Banks Islands
Ontar
Santa Maria
Cape Cumberland
Espiritu Santo
Olpoj
Big Bay
Port Olry
Malao
Matantas
Marino
Mizewo
Nasawa
Lolowai
Wusi
Mt Tabwemasana 1879 m
Ambae
Vilakalaka
Patteson Passage
Luganville
Narango
Aore
Malo
Cape Lisburn
Bougainville Strait
Bwatnapnee
Pentecost
Ranmawat
Baravat
Orap
Poinkros
Norsup
Lakatoro
Selwyn Strait
Unmet
Olal
Ambrym
Mt Marium 1270 m
Baiap
Port Vato
Malakula
Mt Liambele 851 m
Lamap
Paama
Wintua
Ulveah
Lamen Bay
Epi
Valesdir
Shepherd Islands
Tongoa
Eriac
Moso
Paonangisu
Mt Macdonald 647 m
Ekipe
Melei
Forari
Port Vila
Eton
Efate
VANUATU
Tikopia
Nanumea
Niulao
Nanumaga
PACIFIC OCEAN
Nui
Vaitupu
TUVALU
Nukufetau
Funafuti
Nukulaelae
0 75 150 225 km
SCALE 1:7 500 000
Fualifeke
Te Afualiku
Amaluku
Tengako
Tepuka
Fualopa
Fuafatu
Te Namo Lagoon
Funafuti
Vaiaku
Fogafale
Vasafua
Fuagea
Falefatu
Telala
Matelka
Funafala
Te Afuafou
Telele
Moluloa
0 5 10 km
PACIFIC OCEAN
Santop Peak 886 m
Fromango
Unpongkor
Olpota
Aniwa
Lenakel
Ireupuow
Tanna
Mt Tukosmera 1084 m
Anatom
Cooks Grand Reef
French Reefs
Belep Islands
Astrolabe Reefs
New Hebrides Trench
Balabio Island
Tiabet
Poum
Ouega
Koumac
Mt Panie 1628 m
Kaala Gomen
Hienghene
Touho
Ouaco
Poindimie
Voh
Kone
Cape Bocage
Houailou
Nepoui
Poya
Kouaoua
Canala
Bourail
Thio
La Foa
Mt Humboldt 1618 m
Boulouparis
Tontouta
Paita
Yate
Noumea
Goro
Mont Dore
New Caledonia (FRANCE)
Vao
Isle of Pines
St Joseph
Fayaoue
Ouvea
Loyalty Islands
Chepenehe
Lifou
Dueulen
Cape Fleet
Cape Roussin
Tadine
Mare
Walpole Island
Matthew
Hunter Island
0 50 100 150 km
SCALE 1:5 000 000

# Papua New Guinea

FAST FACTS

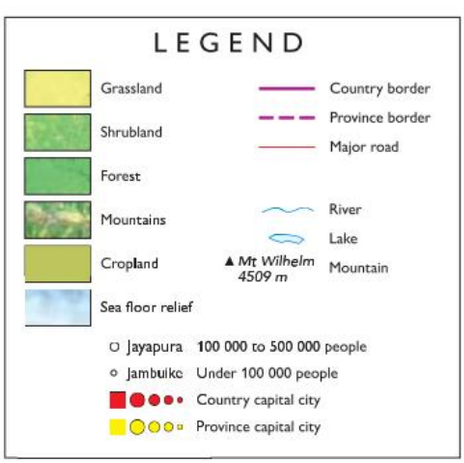
## World records

### Largest butterfly

The endangered Queen Alexandra birdwing is the world's largest butterfly. Female Queen Alexandra birdwings can have a wingspan of up to 31 centimetres. These enormous butterflies are found only in a 100-square-kilometre strip of coastal rainforest near Popondetta in Papua New Guinea (B2). Queen Alexandra birdwing butterflies spend much of their time flying in the rainforest canopy, but will descend close to the forest floor when feeding or laying eggs. The major threat to this species is the clearance of its forest home for oil palm plantations. Because of its rarity and the difficulty of capturing it, the Queen Alexandra birdwing fetches a very high price from collectors. Illegally traded specimens sell for thousands of dollars.

▲ The female Queen Alexandra birdwing has a wingspan of up to 31 centimetres.

▼ The male Queen Alexandra birdwing has a wingspan of up to 20 centimetres.





B
150°E
C
155°E
D
N
0 50 100 150 km
SCALE 1:5 000 000
1 centimetre on the map measures
50 kilometres on the ground.
Simple Conic Projection
Admiralty Islands
Manus
Lorengau
Mussau Island
St Matthias Group
Emirau Island
Ysabel Channel
Hambulyo Island
Tou Island
New Hanover
Tingwon Island
Taskul
North Cape
Kavieng
Steffen Strait
Bismarck Archipelago
Manus
PACIFIC OCEAN
Tabar Islands
Laefu
Lihir Group
Konos
Lambu
New Ireland
Konogogo
Tanga Islands
Namatanai
New Ireland
BISMARCK SEA
Cape Lambert
Rabaul
Keravat
Kokopo
St Georges Channel
East Cape
Rel
Feni Islands
Pondo
Gazelle Peninsula
Kabaman
Open Bay
Cape St George
Kilinailau
Crown Island
Long Island
Bok
Sakar Island
Cape Gloucester
Mt Talawe 1835m
Talasea
Kimbe Bay
Bialla
East New Britain
Wide Bay
Cape Hanpen
Buka Island
Buka
Bougainville (North Solomons)
Sohano
Cape l'Averdy
Siassi
Aisega
Hoskins
Kimbe
Pomio
Palmalmal
Jacquinot Bay
Umboi Island
West New Britain
Kunua
Mt Balbi 2743m
Wakunai
Vitiaz Strait
Huon Peninsula
Mt Bangeta 4121 m
Cape Merkus
Kandrian
Awio
New Britain
Vito
Arawa
Kieta
Bougainville
Panguna
Empress Augusta Bay
Morobe
Lae
Finschhafen
Cape Cretin
Boku
Buin
Huon Gulf
PAPUA NEW GUINEA
Shortland Islands
Bulolo
Wau
Kui
Treasury Islands
Morobe
Hercules Bay
SOLOMON SEA
SOLOMON ISLANDS
Cape Ward Hunt
Trobriand Islands
Iorma
Mt Albert Edward 3990 m
Kokoda
Losuia
Kiriwina Island
Buna
Popondetta
Yodda
Mt Victoria 4035 m
Kokoda
Marshall Bennett Islands
Woodlark Island
Guasopa
Hisiu
Cape Nelson
Tufi
Northern (Oro)
Central
Kokoda Track
Goodenough Island
Bolubolu
Ioribaiwa
Afore
Fergusson Island
Port Moresby
National Capital District
Bullidobu
Kwikila
Salamo
Esa'ala
D'Entrecasteaux Islands
Milne Bay
Baniara
Rabaraba
Schulea
Normanby Island
Hula
Kupiano
Cape Rodney
Abau
OWEN STANLEY RANGE
Goschen Strait
Magarida
Alocau
Orangerie Bay
Eagle Point
Milne Bay
Samarai
Misima Island
Bwagaoia
Sideia Island
Pocklington Reef
Louisiade Archipelago
The Calvados Chain
CORAL SEA
Tagula
Rossel Island
Tagula Island
10°S
5°S
3
2
1

# New Zealand

FAST FACTS

## World records

### Largest volcanic eruption

The largest volcanic eruption in the last 75 000 years was the eruption of the Taupo volcano (D3) around 26 500 years ago. Volcanic material from the eruption covered much of the central North Island, in some places to a depth of 200 metres. A line of volcanoes dominates the north-eastern North Island as the Pacific Plate subducts beneath the Indo-Australian Plate. This location also produces numerous earthquakes and mountain ranges.

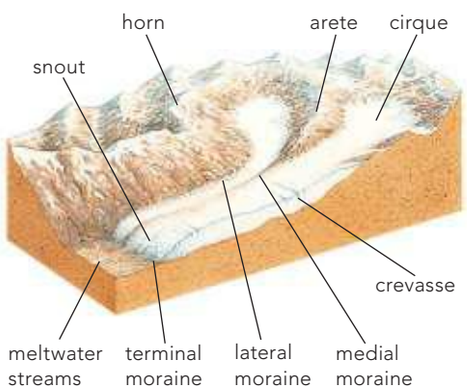
### Glaciers meet rainforest

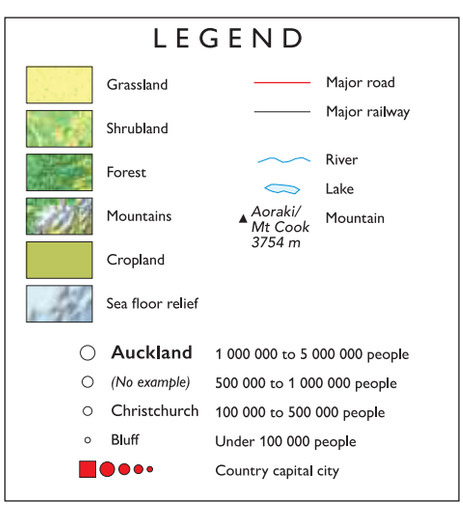
There are over 130 000 glaciers in the world, most of them in the Arctic and Antarctic regions. Only three glaciers flow through rainforest and two of these are on the west coast of New Zealand's South Island. The Fox and Franz Josef glaciers (C2) begin high on the slopes of the Southern Alps, which run the length of the island, and flow down towards the Tasman Sea. These glaciers, like all glaciers, erode the rocks over which they flow, carving giant U-shaped canyons and steep-sided pyramid peaks.

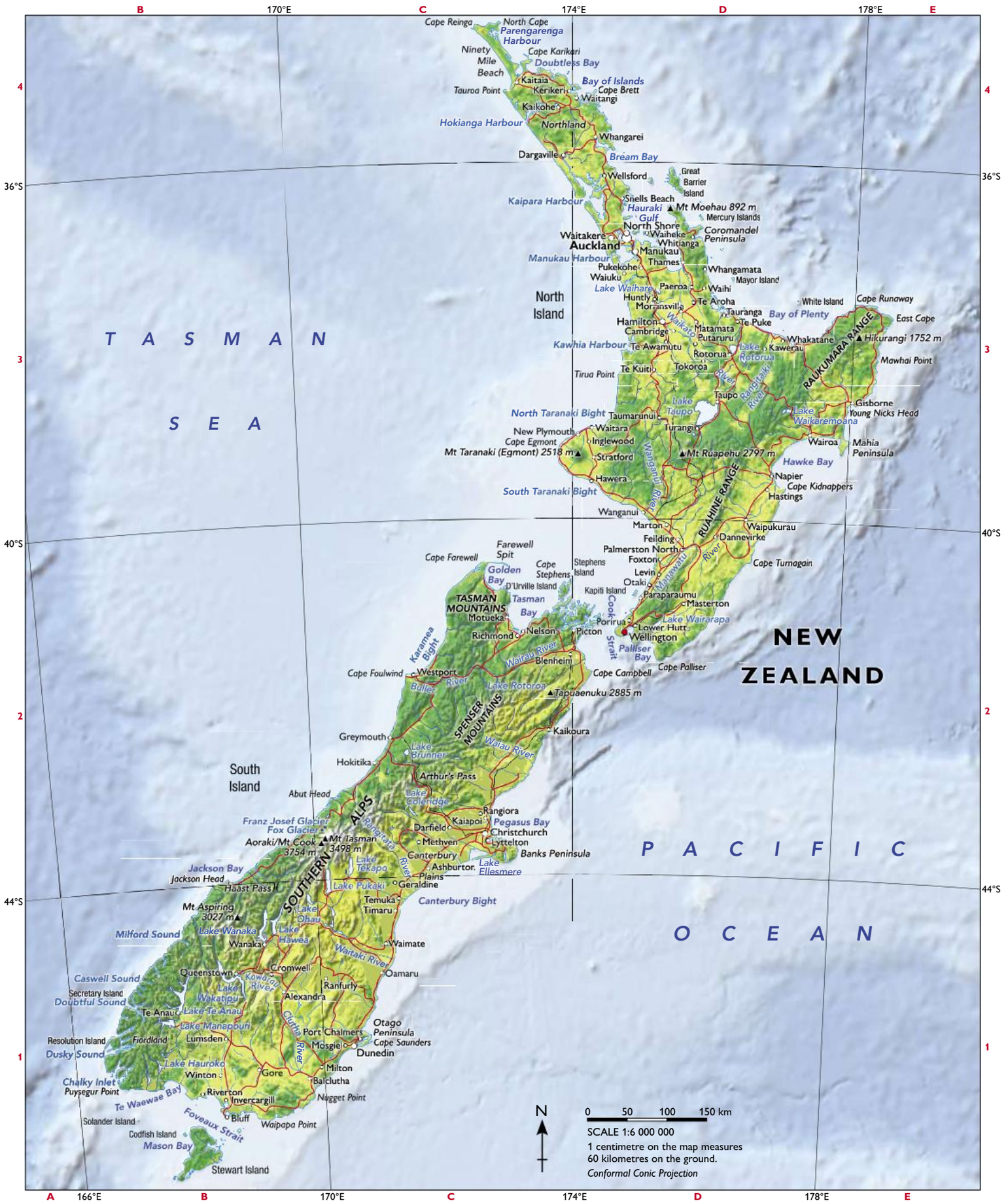
▲ Lake Taupo (D3) is a vast caldera (a large volcanic crater) that was formed during the eruption. To the south lie the volcanoes of Ruapehu, Tongariro and Ngauruhoe.

▼ The Fox Glacier falls 2600 metres along its 13-kilometre journey.

**FEATURES OF A GLACIER**



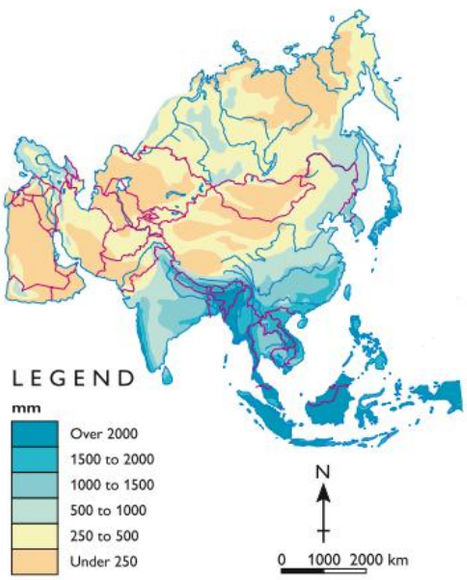

B
170°E
C
174°E
D
178°E
E
A
166°E
4
3
2
1
36°S
40°S
44°S
TASMAN SEA
PACIFIC OCEAN
NEW ZEALAND
North Island
South Island
Cape Reinga
North Cape
Parengarenga Harbour
Ninety Mile Beach
Cape Karikari
Doubtless Bay
Kaitaia
Bay of Islands
Tauroa Point
Kerikeri
Cape Brett
Waitangi
Kaikohe
Hokianga Harbour
Northland
Whangarei
Dargaville
Bream Bay
Wellsford
Great Barrier Island
Snells Beach
Kaipara Harbour
Hauraki Gulf
Mt Moehau 892 m
Mercury Islands
North Shore
Waiheke
Coromandel Peninsula
Waitakere
Auckland
Whitianga
Manukau
Manukau Harbour
Thames
Pukekohe
Whangamata
Waiuku
Mayor Island
Lake Waihare
Paeroa
Waihi
Huntly
Te Aroha
White Island
Cape Runaway
Morrinsville
Tauranga
Bay of Plenty
East Cape
Hamilton
Te Puke
Waikato River
Cambridge
Matamata
Putaruru
Whakatane
Hikurangi 1752 m
Kawhia Harbour
Te Awamutu
Lake Rotorua
Kawerau
Rotorua
Mawhai Point
Tirua Point
Te Kuiti
Tokoroa
Rangitaiki River
RAUKUMARA RANGE
Taupo
Lake Taupo
Gisborne
Young Nicks Head
North Taranaki Bight
Taumarunui
Lake Waikaremoana
Waitara
Turangi
New Plymouth
Cape Egmont
Inglewood
Wairoa
Mahia Peninsula
Mt Taranaki (Egmont) 2518 m
Stratford
Whanganui River
Mt Ruapehu 2797 m
Hawke Bay
Hawera
Napier
Cape Kidnappers
South Taranaki Bight
Hastings
Wanganui
RUAHINE RANGE
Marton
Waipukurau
Feilding
Dannevirke
Palmerston North
Manawatu River
Foxton
Cape Turnagain
Cape Farewell
Farewell Spit
Stephens Island
Golden Bay
Cape Stephens
Levin
D'Urville Island
Otaki
Kapiti Island
Paraparaumu
Masterton
TASMAN MOUNTAINS
Motueka
Tasman Bay
Cook Strait
Porirua
Lake Wairarapa
Lower Hutt
Nelson
Picton
Wellington
Karamea Bight
Richmond
Palliser Bay
Cape Palliser
Wairau River
Blenheim
Cape Foulwind
Westport
Cape Campbell
Buller River
Lake Rotoroa
Tapuaenuku 2885 m
SPENSER MOUNTAINS
Kaikoura
Greymouth
Lake Brunner
Waiau River
Hokitika
Arthur's Pass
Abut Head
Lake Coleridge
ALPS
Rangiora
Kaiapoi
Pegasus Bay
Franz Josef Glacier
Fox Glacier
Darfield
Christchurch
Aoraki/Mt Cook 3754 m
Mt Tasman 3498 m
Methven
Lyttelton
Canterbury
Banks Peninsula
Rangitata River
Jackson Bay
Jackson Head
Lake Tekapo
Ashburton
Lake Ellesmere
Haast Pass
Lake Pukaki
Geraldine
Plains
SOUTHERN
Mt Aspiring 3027 m
Temuka
Timaru
Canterbury Bight
Lake Ohau
Milford Sound
Lake Wanaka
Lake Hawea
Wanaka
Waimate
Waitaki River
Queenstown
Cromwell
Oamaru
Caswell Sound
Kawarau River
Ranfurly
Secretary Island
Lake Wakatipu
Alexandra
Doubtful Sound
Te Anau
Lake Te Anau
Clutha River
Lake Manapouri
Port Chalmers
Otago Peninsula
Resolution Island
Fiordland
Lumsden
Mosgiel
Cape Saunders
Dunedin
Dusky Sound
Lake Hauroko
Milton
Gore
Winton
Balclutha
Chalky Inlet
Puysegur Point
Riverton
Te Waewae Bay
Invercargill
Nugget Point
Bluff
Waipapa Point
Solander Island
Foveaux Strait
Codfish Island
Mason Bay
Stewart Island
N
0 50 100 150 km
SCALE 1:6 000 000
1 centimetre on the map measures
60 kilometres on the ground.
Conformal Conic Projection

# Asia: Environments

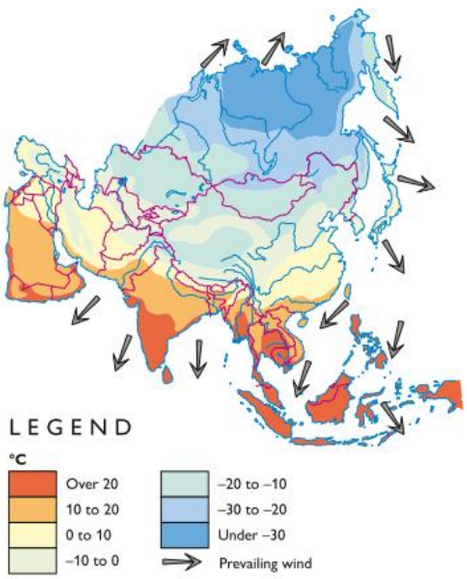
Asia stretches from the frozen Arctic Circle in the north to the steaming tropical rainforests of the south. It is the world's largest continent in both area and population, with six out of ten people in the world living in Asia. The world's highest and lowest places are found in Asia – Mount Everest in Nepal is the world's tallest mountain at 8848 metres above sea level and the Dead Sea in Israel is the lowest point on the Earth's surface at 400 metres below sea level.

▲ Steppe is a dry, cold grassland that is mainly found in Mongolia, Kazakhstan and China. Nomadic Mongols herd their livestock on the steppe and put up circular tents, known as gers, for shelter.

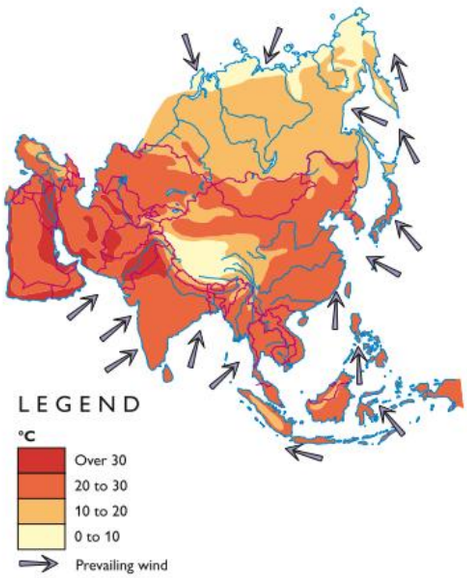
ANNUAL RAINFALL



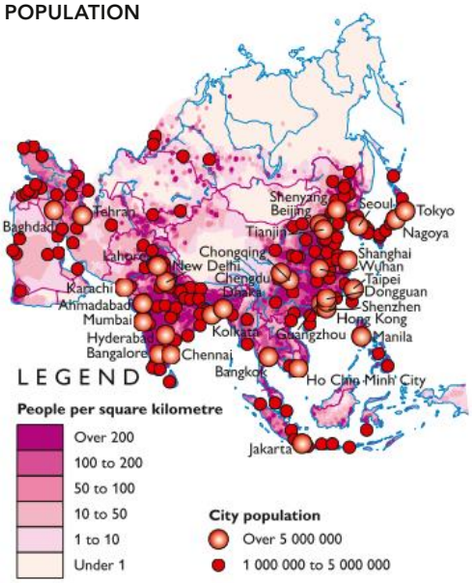

JANUARY TEMPERATURES



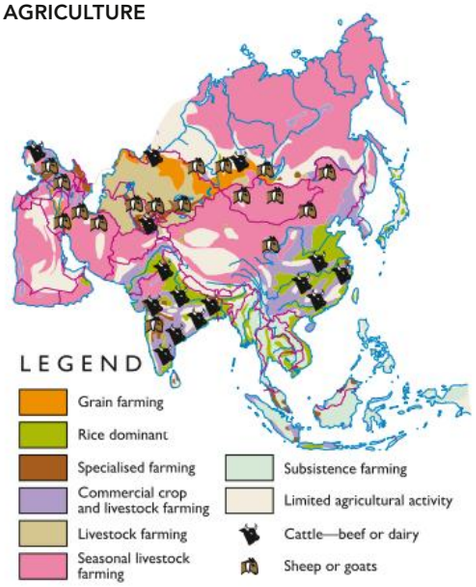

JULY TEMPERATURES



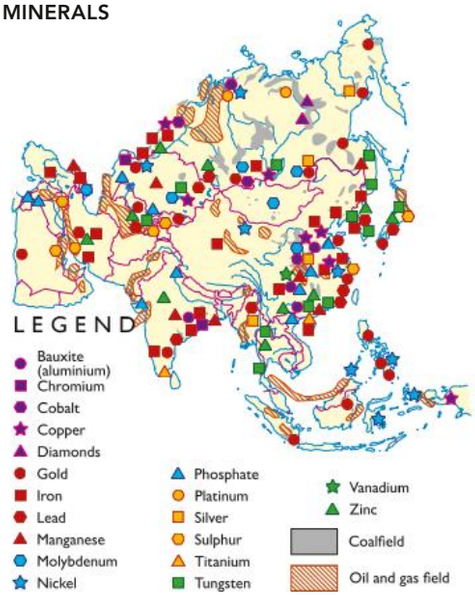

POPULATION



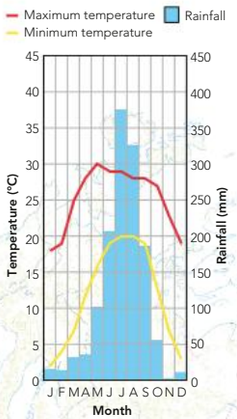

AGRICULTURE




MINERALS



**KATHMANDU: CLIMATE GRAPH**




Kathmandu, the capital of Nepal, is the gateway to tourism in the Himalayas, the world's highest mountain range. Kathmandu lies 1400 metres above sea level.

The Dead Sea is the lowest point on land – 400 metres below sea level.

Saudi Arabia contains 25 per cent of the world's oil reserves.

At 818 metres high, the Burj Dubai skyscraper opened in Dubai in 2010. It is the world's tallest building.

Mongolia has the world's lowest population density of 1.7 people per square kilometre.

China has the world's largest population of over 1.35 billion people.

Tokyo is the world's largest city – its metropolitan area houses a population in excess of 35 000 000 people.

Mount Everest is the world's highest mountain at 8848 metres.

The Ganges Delta is the world's largest, covering 75 000 square kilometres.

Cherrapunji in India is the world's wettest place, receiving 11 430 millimetres each year.

ARCTIC OCEAN
BERING SEA
KARA SEA
LAPTEV SEA
Arctic Circle
URAL MOUNTAINS
Ob River
Siberia
SEA OF OKHOTSK
Ural River
Lake Baikal
BLACK SEA
MEDITERRANEAN SEA
CASPIAN SEA
Aral Sea
Dead Sea
MONGOLIA
Gobi Desert
SEA OF JAPAN
Tokyo
SAUDI ARABIA
Arabian Desert
Dubai
RED SEA
CHINA
YELLOW SEA
Yangtze River
EAST CHINA SEA
HIMALAYAS
Kathmandu
Mt Everest 8848 m
Ganges River
Cherrapunji
Tropic of Cancer
PACIFIC OCEAN
ARABIAN SEA
Ganges Delta
SOUTH CHINA SEA
ANDAMAN SEA
Equator
INDIAN OCEAN
ARAFURA SEA

**LEGEND**

- Desert
- Steppe
- Forest steppe
- Forest
- Highland
- Tundra
- Mountains
- Cropland
- Urban area
- Sea floor relief
- Country border
- Largest city
- Town
- Highest mountain

N

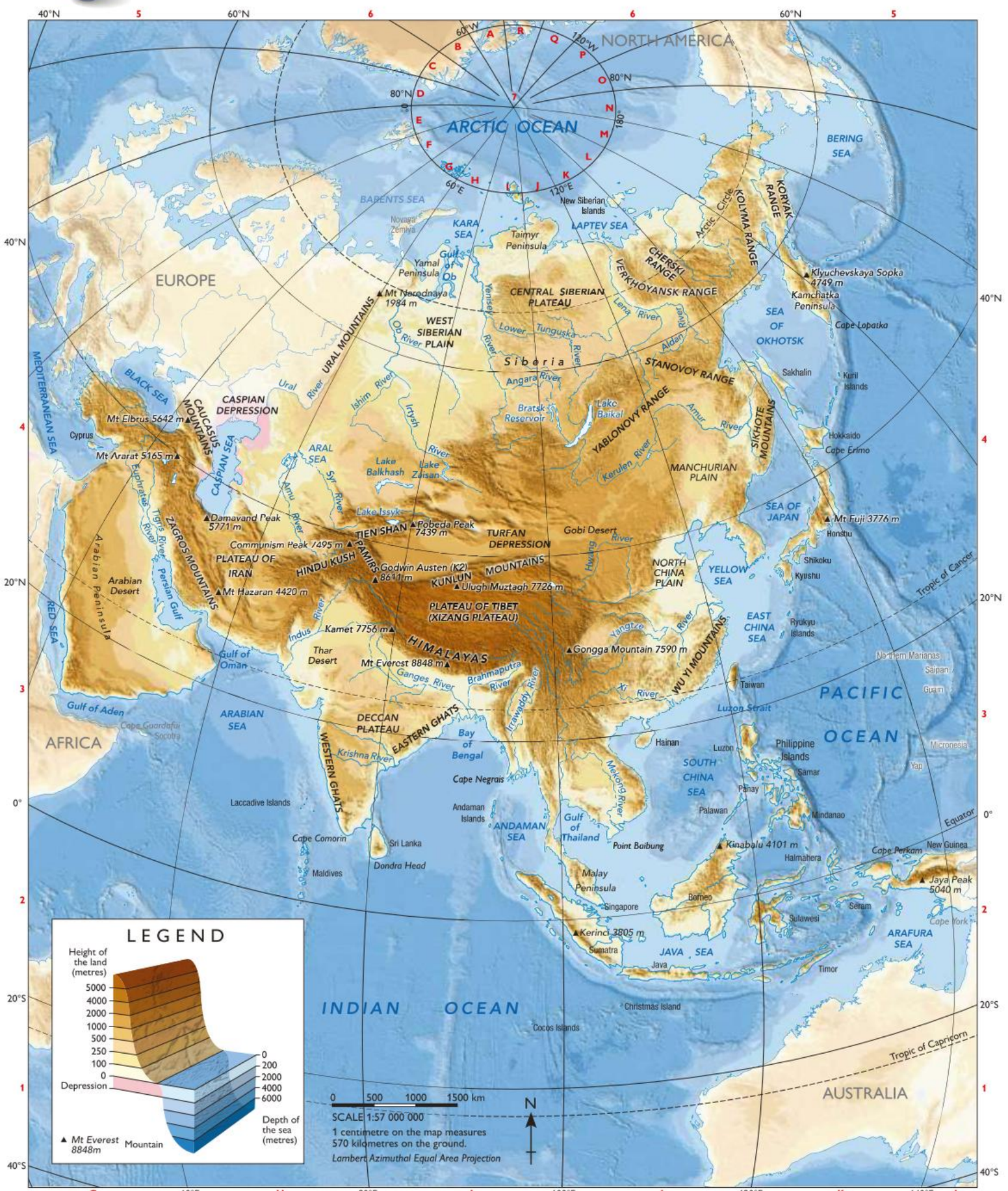
0 500 1000 1500 km

SCALE 1:57 000 000

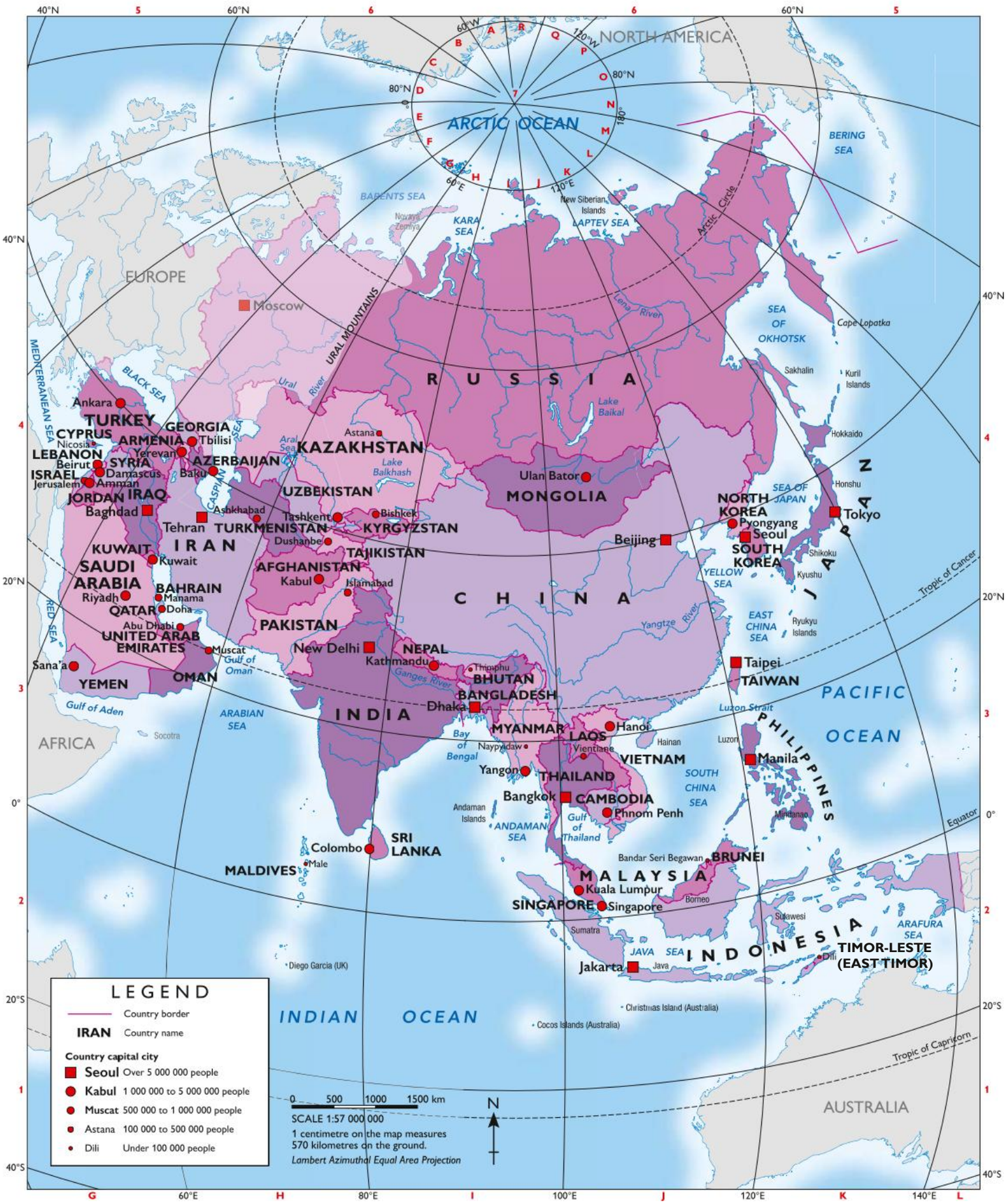
1 centimetre on the map measures 570 kilometres on the ground.

*Lambert Azimuthal Equal Area Projection*

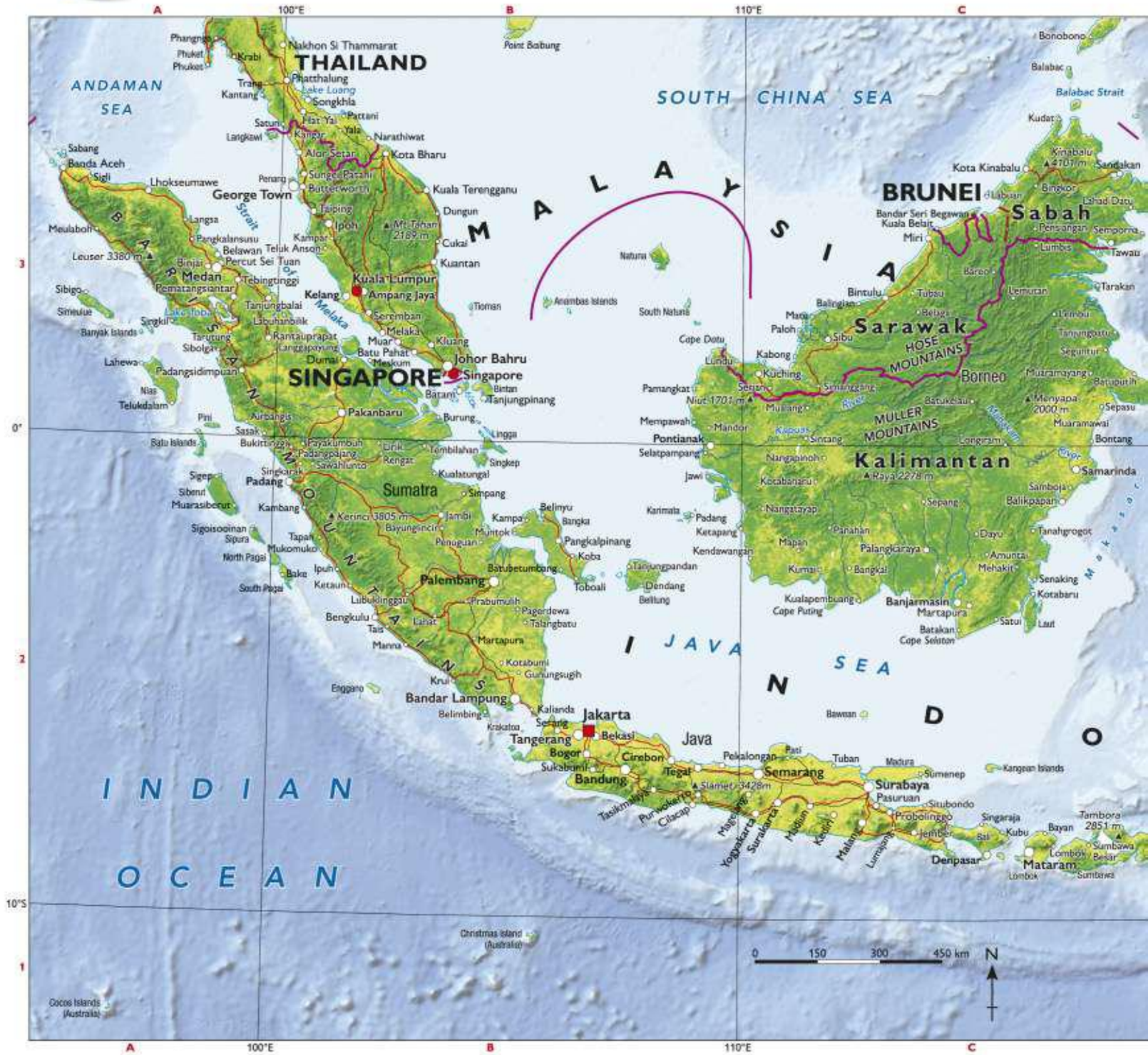
# Asia: Physical



# Asia: Political



# Indonesia and Malaysia




## LEGEND

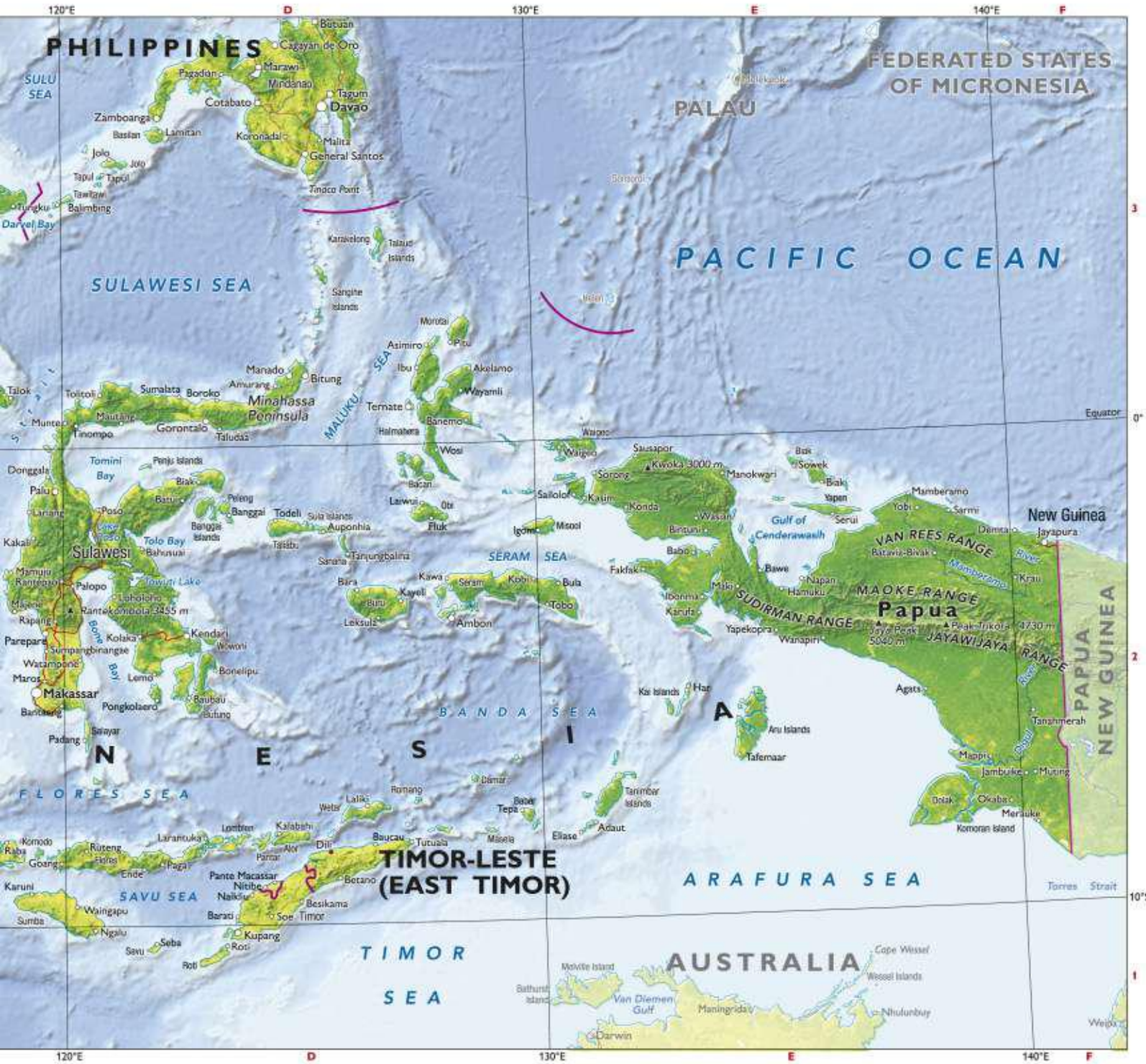
- Grassland
- Shrubland
- Forest
- Mountains
- Cropland
- Sea floor relief
- Country border
- State border
- Dependency (Cocos Islands (Australia))
- Major road
- Major railway
- River
- Lake
- Jaya Peak 5040 m — Mountain
- Jakarta — Over 5 000 000 people
- Medan — 1 000 000 to 5 000 000 people
- Denpasar — 500 000 to 1 000 000 people
- Jayapura — 100 000 to 500 000 people
- Soe — Under 100 000 people
- Country capital city

FAST FACTS

## World records

### Largest noise

On 27 August 1883, four huge volcanic explosions destroyed the island of Krakatoa (B2). The sound of the explosions was heard near Mauritius, 4800 kilometres away, and also in Perth (3500 kilometres away). The eruption and the tsunamis it generated led to 36 417 deaths. Global temperatures fell by up to 1.2 degrees Celsius in the following year.



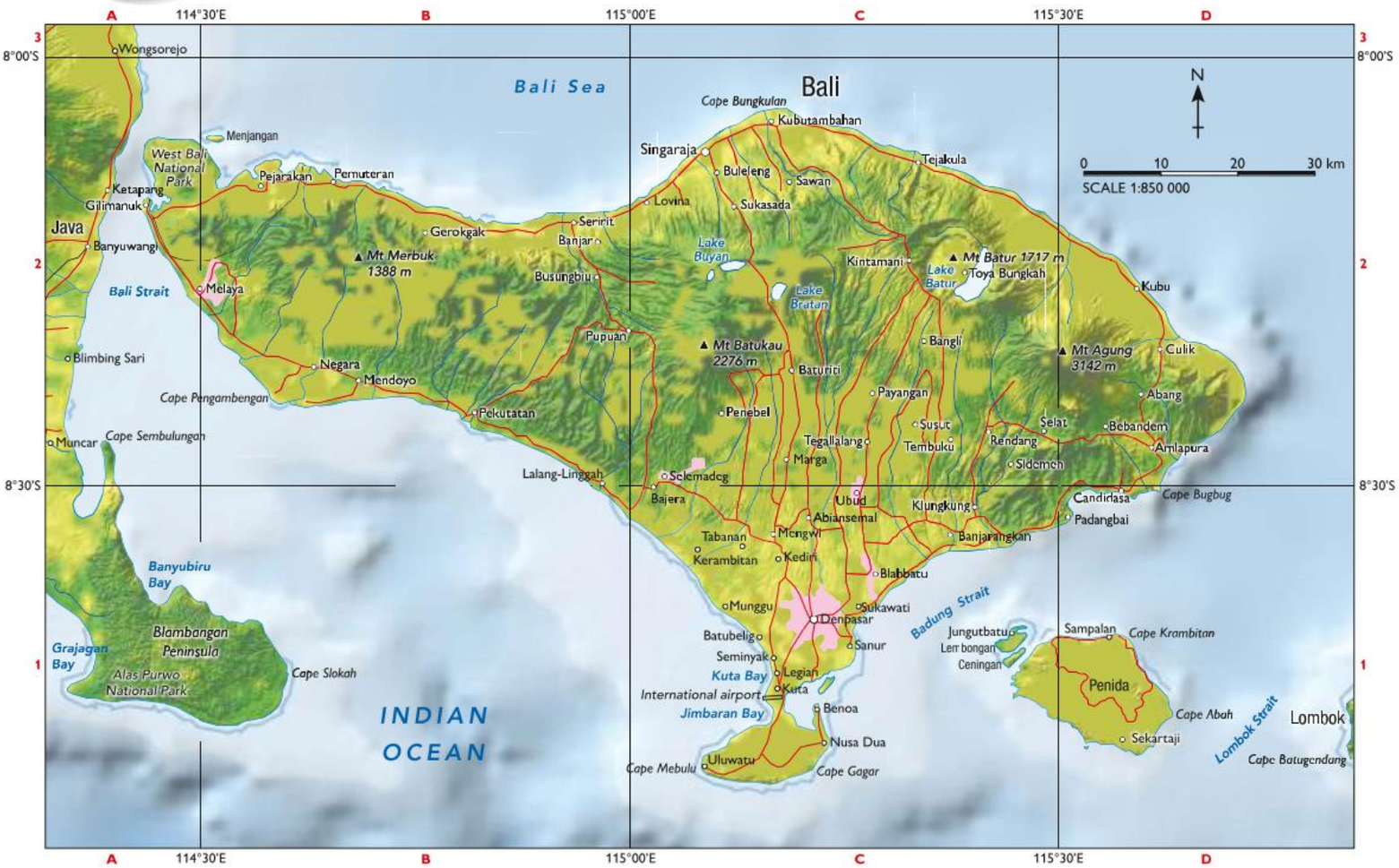

### Highest rate of deforestation

Indonesia loses around 20000 square kilometres of forest a year, an area equivalent to one-third of Tasmania. The deforestation is driven by logging and a demand for land for farming. As a result, there are almost 7000 endangered species in Indonesia.

◄ Krakatoa, part of the Indonesian archipelago, split into two islands following the 1883 eruption.

Two species of orangutans are endangered in Indonesia. ►

# Bali



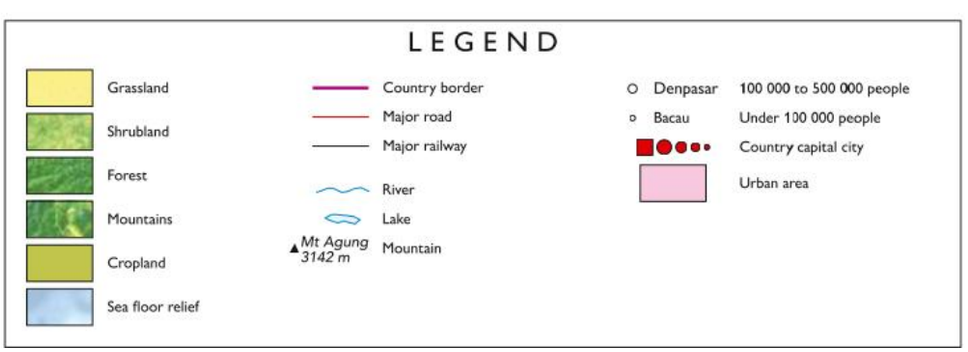

FAST FACTS

## World records

### Most volcanic country

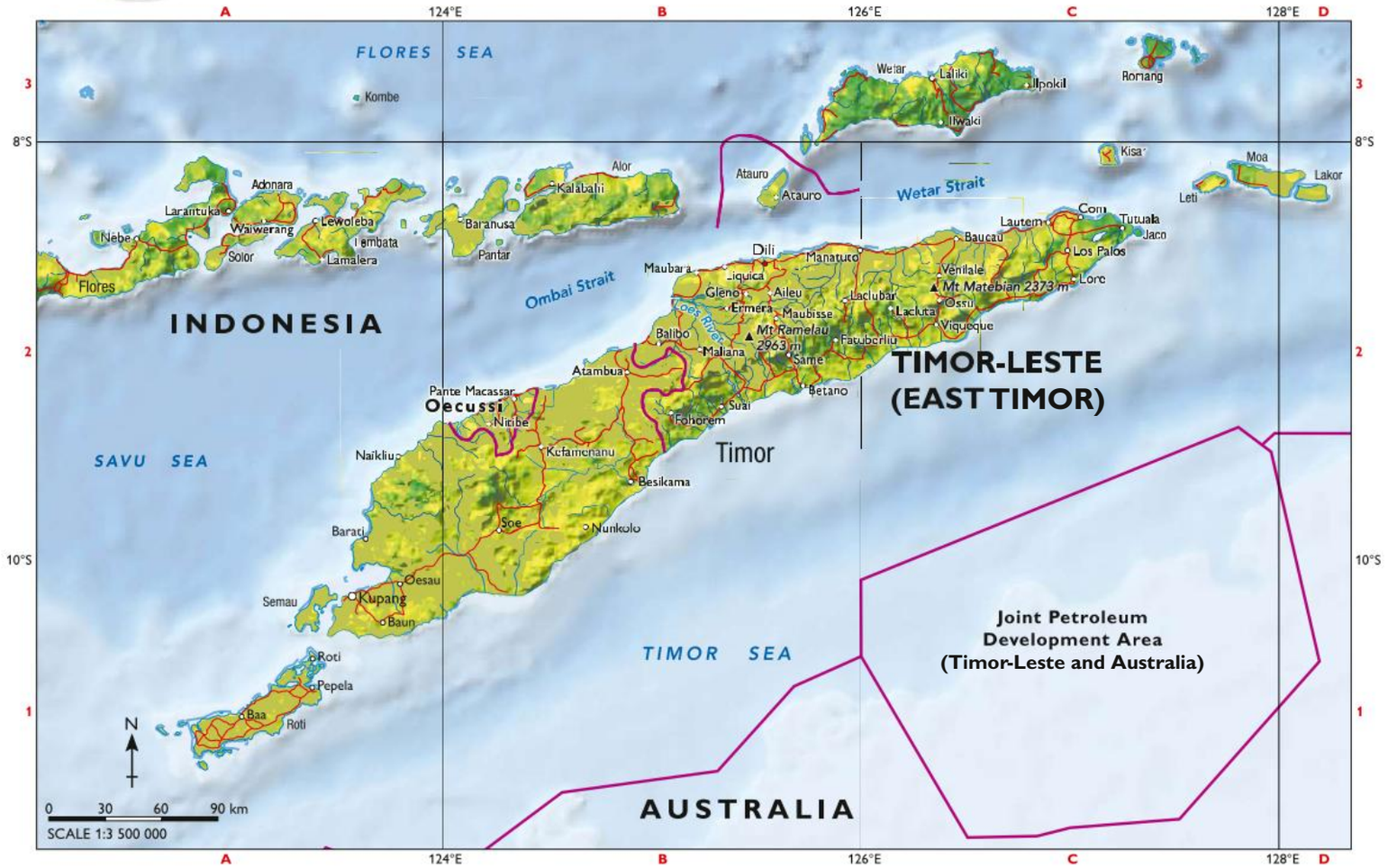
Bali is part of Indonesia, the world's most volcanic country. The country has 76 active volcanoes, four-fifths of which have erupted in the last century. While these eruptions have resulted in great loss of life and property, they are also partially responsible for the extraordinary fertility of the land. The fertile volcanic soils are terraced in Bali (below right) to capture the abundant rainfall and create flat fields from steep mountain hillsides. Bali's highest and most destructive volcano, Mount Agung (right), is considered a sacred mountain by the Balinese whose most important temple sits high on the volcano. The temple was almost destroyed by the most recent major eruption in 1963 that killed more than 1500 people.

▲ Mount Agung, Bali's most destructive volcano




▼ Balinese terraces capture the abundant rainfall to grow rice.

# Timor-Leste (East Timor)




FAST FACTS

## World records

### First country of the century

Timor-Leste became the first new country of this century when it became independent from Indonesia on 20 May 2002. Timor-Leste declared independence from Portugal in 1975 but was occupied by Indonesia in the same year. Following decades of struggle and a referendum in 1999 in which the Timorese people voted to become independent, the Indonesians withdrew their troops and a new country was born. Australian troops helped to restore calm after the withdrawal and have returned several times to help maintain law and order.

### Largest producer of organic coffee beans

Timor-Leste is one of the world's poorest countries but there is hope for a brighter future. Coffee is already the nation's most important export crop. With no pesticides or non-organic fertilisers used, Timor-Leste is the world's largest producer of organic coffee beans. Starbucks, the world's largest coffeehouse company, sources a large proportion of its Free Trade coffee beans for Australia from Timor-Leste.

▲ Australian soldiers helped to maintain law and order during uncertain times in Timor-Leste.

Timor-Leste is the largest producer of organic coffee beans in the world. ►

# Indochina and the Philippines

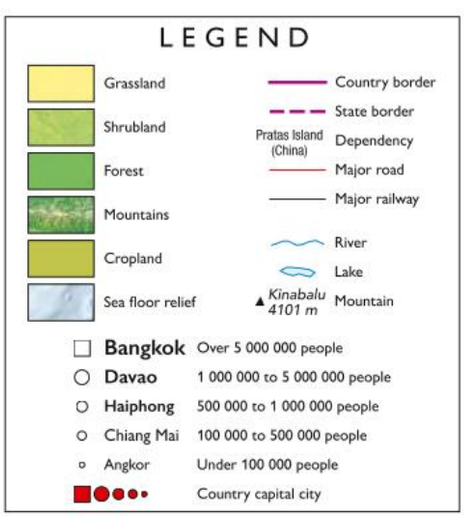
FAST FACTS

## World records

### Largest religious monument

The temple city of Angkor Wat (B3) in Cambodia is the world's largest religious monument. At the centre of the monument are 70-metre-high towers. Angkor Wat was completed around 1150 CE. It is now protected as a World Heritage site and is a major tourist destination for international visitors.

▲ Angkor Wat attracts more than one million visitors each year.





110°E
115°E
120°E
125°E
D
E
F
G
5
20°N
4
15°N
3
10°N
2
5°N
1
Xi River
Wuzhou
Chaozhou
Tropic of Cancer
Shantou
Guangzhou
Huizhou
Dongguan
Shenzhen
Hong Kong (Xianggang)
Pearl River
Jiangmen
Zhongshan
Zhuhai
Macau (Aomen)
Yulin
Maoming
Zhanjiang
Qiongzhou Strait
Haikou
Hainan
Wanning
Chiai
TAIWAN
Tainan
Kaohsiung
Yungkang
Taitung
PACIFIC
OCEAN
Bashi Channel
Pratas Island
(China)
Ratan Islands
Luzon Strait
Babuyan Islands
Cape Engano
Laoag
Aparri
Tuguegarao
Bontoc
Ilagan
Luzon
Santiago
San Fernando
Baguio
Bayombong
Dagupan
San Jose
Baler
Tarlac
Cabanatuan
Angeles
Mt Pinatubo 1660 m
Scarborough Reef
Olongapo
Polillo Islands
Manila
Binan
San Pablo
Lucena
Lopez
Daet
Pandan
Virac
Batangas
Calapan
Boac
Iriga
Naga
Mamburao
Legaspi
Sorsogon
Mindoro
Bongabong
Catanduanes
Masbate
Samar
Tablas
Calbayog
Calbalogan
Calarian Group
Masbate
Pandan
Roxas
Tacloban
El Nido
Panay
Victorias
Ormoc
Leyte
Iloilo
Bacolod
Cebu
Toledo
Cebu
Dinagat
Taytay
Negros
Palawan
Roxas
Cauayan
Bohol
Siargao
Puerto Princesa
Cagayan
Islands
Tanjay
Dumaguete
Lanuza
Eran
Quezon
Butuan
MINDANAO
SEA
Bonobono
Dipolog
Cagayan de Oro
Bislig
Sindangan
Ozamiz
Iligan
Marawi
Balabac
Balabac
SULU SEA
Pagadian
Mindanao
Tagum
Caraga
Balabac Strait
Cotabato
Davao
Kudat
Mapun
Zamboanga
Mt Apo 2954 m
Digos
Moro Gulf
Lamitan
Basilan
Koronadal
Malita
Polomoloc
General Santos
Jolo
Jolo
Tapul
Tapul
SULAWESI SEA
Tinaca Point
Kota Kinabalu
Kinabalu 4101 m
Sandakan
Bingkor
Labuan
Keningau
Tawitawi
Balimbing
Tungku
Kuamut
Lahad Datu
BRUNEI
Bandar Seri Begawan
Sabah
Darvel Bay
Kuala Belait
Pensiangan
Semporna
Miri
Tawau
Lumbis
Sarawak
Borneo
INDONESIA
Karakelong
Sangihe
Islands
INDONESIA
0
100
200
300 km
SCALE 1:9 200 000
1 centimetre on the map measures
92 kilometres on the ground.
Lambert Conformal Conic Projection
N
Paracel Islands
(claimed by China
and Vietnam)
Spratly Islands
(claimed by China
Philippines, Vietnam
and Malaysia)
SOUTH CHINA SEA
PHILIPPINE SEA
PHILIPPINES

# East Asia

FAST FACTS

## World records

### Largest population

With 1.35 billion people, China (D3) has the largest population of any country on Earth. One in every five people live in China. In 1979, the Chinese government introduced the one-child policy, greatly reducing population growth. It is estimated that India will overtake China as the most populous country by 2050.

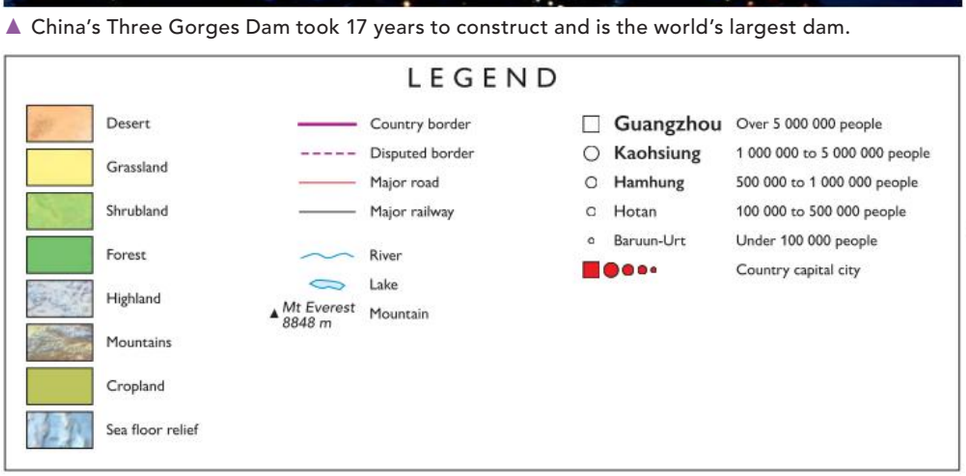
### Lowest population density

Mongolia has the world's lowest population density of 1.7 people per square kilometre. Mongolia is high, cold and windy with large desert and mountainous regions. The capital city of Ulan Bator (E4) has the lowest average temperature of any national capital in the world.

### Largest dam

Completed in 2009, the Three Gorges Dam (F3) is the largest in the world. The 2335-metre-long dam drowned river valleys and forced the relocation of 1.2 million people. The Three Gorges Dam will help control flooding on the Yangtze River that has been responsible for some of the world's worst disasters. The huge hydroelectricity plant associated with the dam is the second largest in the world.

▲ China's Three Gorges Dam took 17 years to construct and is the world's largest dam.





90°E
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20°N
RUSSIA
MONGOLIA
CHINA
MYANMAR
LAOS
VIETNAM
THAILAND
JAPAN
TAIWAN
PHILIPPINES
NORTH KOREA
SOUTH KOREA
Ulan Bator
Beijing
Tianjin
Shanghai
Chongqing
Chengdu
Wuhan
Guangzhou
Shenzhen
Hong Kong (Xianggang)
Macau (Aomen)
Harbin
Changchun
Shenyang
Pyongyang
Seoul
Taipei
Hanoi
Gobi Desert
Ordos Desert
Taklimakan Desert
Lop Nor
Qinghai Lake
Dongting Lake
Poyang Lake
Hulun Lake
Baikal
Lake Khanka
Three Gorges Dam
Yellow Sea
East China Sea
South China Sea
Sea of Japan
Gulf of Chihli
Gulf of Tonkin
Taiwan Strait
Bashi Channel
Tropic of Cancer
Yangtze River
Yellow River
Amur River
Mekong River
Salween River
Irrawaddy River
Brahmaputra River
Himalaya Mountains
Tibetan Plateau
Yablonovy Range
Greater Hinggan Mountains
Khangai Mountains
Altai Mountains
Qilian Mountains
Daba Mountains
Wuling Mountains
Nanling Mountains
Hengduan Range
Arakan Range
Pegu Range
Naga Hills
Shan Plateau
Sichuan Basin
Turfan Depression

# Japan and Korea

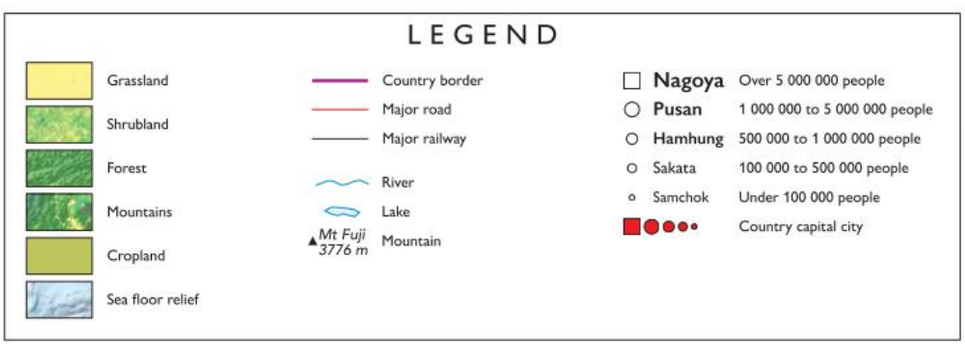
FAST FACTS

## World records

### Largest city

Tokyo is the largest metropolitan area in the world, with a population in excess of 35 million people. The city of Tokyo has grown so large that it has completely merged with other growing cities – Chiba, Kawasaki, Saitama and Yokohama. It covers an area of approximately 13 500 square kilometres with a population density of 2642 people per square kilometre.

▲ Skyscrapers in Tokyo's Shinjuku district form part of the world's largest metropolitan area.





132°E
136°E
140°E
144°E
148°E
C
D
E
F
G
44°N
40°N
36°N
32°N
RUSSIA
SEA OF OKHOTSK
SEA OF JAPAN (EAST SEA)
PACIFIC OCEAN
Sakhalin
Aniva Bay
La Perouse Strait
Cape Soya
Wakkanai
Rebun
Hishiri
Esashi
Teshio
Hokkaido
Haboro
Mombetsu
Cape Shiretoko
Kurashir Island
Kuril Islands
Iturup Island
Nayoro
Abashiri
Shibetsu
Rumoi
Kitami
Shikotan
Asahikawa
Asahi Peak 2290 m
Takikawa
Ashibetsu
Ishikari Bay
Iwamizawa
Otaru
Sapporo
Obihiro
Kushiro
Lake Shikotsu
Horoshiri Peak 2052 m
HIDAKA RANGE
Tomakomai
Date
Muroran
Shizunai
Yakumo
Uchiura Bay
Mori
Cape Erimo
Hakodate
Cape Esan
Matsumae
Cape Oma
Strait
Cape Shiriya
Mutsu
Tsugaru
Aomori
Goshogawara
Misawa
Hirosaki
Hachinohe
Ohate
Ninohe
Noshiro
Kuji
Iwate 2040 m
Akita
Morioka
Miyako
Honjo
Hanamaki
Kitakami River
Kamaishi
Sakata
Ichinoseki
Kesennuma
Tsuruoka
Mogami River
Furukawa
Shizugawa
Shiogama
Ishinomaki
Yamagata
Sendai
Yonezawa
Soma
Sado
Niigata
Fukushima
Sanjo
Nitsu
Cape Rokugo
Lake Inawashiro
Suzu
Kashiwazaki
Nagaoka
Koriyama
Shirakawa
Toyama Bay
Nanao
Joetsu
Iwaki
Mt Shirane 2578 m
Toyama
Nagano
Utsunomiya
Hitachi
Kanazawa
Mt Hotaka 3190 m
Maebashi
Mito
Honshu
Komatsu
Matsumoto
Kumagaya
Takayama
Fukui
Okaya
Omiya
Tokyo
Takefu
Ina
Kofu
Ome
Choshi
Cape Inubo
Wakasa Bay
Tsuruga
Sagamihara
Chiba
Kawasaki
Yokohama
Yokosuka
Mt Fuji 3776 m
Gifu
Nagoya
Lake Biwa
Numazu
Odawara
Toyota
Okazaki
Shizuoka
Cape Nojima
Sagami Bay
Hamamatsu
Toyohashi
Ise Bay
Ise
Nii Island
Izushichito Islands
Miyake Island
Hachijo Island
Oki Archipelago
Dogo
Dozen
Saigo
Ulleung Island
Tottori
Matsue
Izumo
Yonago
Fukuchiyama
Maizuru
Gotsu
Tsuyama
Hamada
CHUGOKU MOUNTAINS
Masuda
Okayama
Himeji
Kobe
Osaka
Kyoto
Kurashiki
Higashiosaka
Nagato
Hiroshima
Fukuyama
Sakai
Takamatsu
Yamaguchi
Kure
Inland Sea
Shimonoseki
Iwakuni
Wakayama
Ube
Tokushima
Owase
Kitakyushu
Niihama
Suo Sea
Matsuyama
Tanabe
Shingu
Fukuoka
Kurume
Kochi
Uwajima
Muroto
Cape Muroto
Cape Shiono
Oita
Bungo Channel
Omuta
Shikoku
Shimanto
Sukumo
Cape Ashizuri
Kumamoto
Yatsushiro
Nobeoka
Hyuga
Hitoyoshi
Kyushu
Miyazaki
Miyakonojo
Kagoshima
Kanoya
Cape Toi
Osumi Strait
Tanega Island
Kii Channel
Mudanjiang
Jixi
Boli
Qitaihe
Muling
Lake Khanka
Ussuri River
Amur River
Mt Vysokaya 1746 m
Cape Belkina
Cape Yegorova
SIKHOTE MOUNTAINS
Ussurisk
Mt Oblachnaya 1855 m
Cape Nizmennyy
Vladivostok
Peter the Great Bay
Nakhodka
Hoeryong
Najin
Chongjin
N
0
100
200 km
SCALE 1:7 000 000
1 centimetre on the map measures
70 kilometres on the ground.
Equidistant Conic Projection

# South Asia

FAST FACTS

## World records

### Highest mountains

The Himalayas (D4), containing 90 of the 100 highest peaks on Earth, is the world's highest mountain range. Mount Everest in Nepal (D3) is the world's highest mountain, rising 8848 metres above sea level.

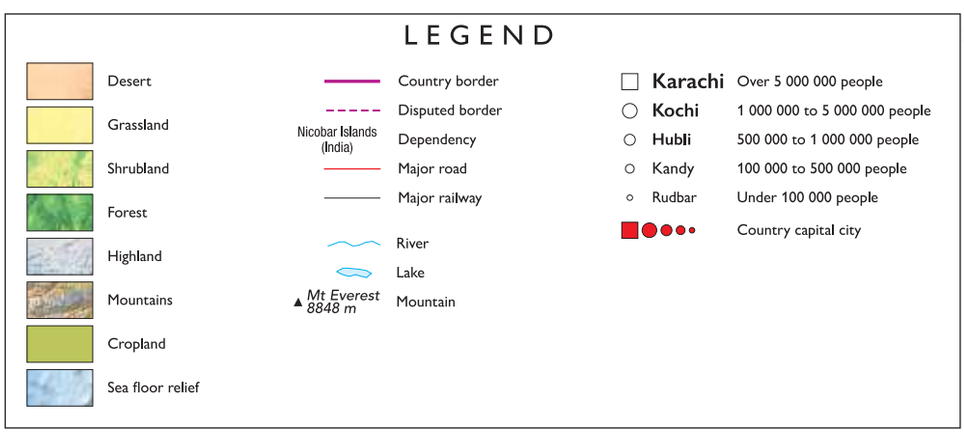
### Highest rainfall

Cherrapunji in India (E3) receives an average of 11 430 millimetres of rainfall every year – more than any other place on Earth.

### Largest delta

The Ganges River Delta in Bangladesh (D3) is the world's largest delta. Large volumes of sediment have been deposited near the mouth of the Ganges River, forcing it to split into a number of smaller streams. The silt deposits cover an area of 60 000 square kilometres. The rich soil supports many farms, but many lives have been lost from the frequent cyclones and flooding in the region.


▲ The Ganges Delta is highly cultivated and floods every summer during the monsoons.





70°E
80°E
90°E
100°E
C
D
E
F
30°N
20°N
10°N
UZBEKISTAN
TAJIKISTAN
Dushanbe
Tashkent
Kurgan Tyube
Termez
Feyzabad
Kunduz
Mazar-i-Sharif
Baghlan
Shahr Fulam
Chaharikar
Kabul
Asadabad
Jalalabad
Khyber Pass
Gardez
Peshawar
Wari
Islamabad
Rawalpindi
Srinagar
Muzaffarabad
Mansehra
Jammu
Sialkot
Gujranwala
Gujrat
Sargodha
Lahore
Amritsar
Jhang
Faisalabad
Kasur
Jalandhar
Ludhiana
Shimla
Chandigarh
Multan
Sahiwal
Okara
Patiala
Dehra Dun
Dera Ghazi Khan
Bahawalpur
Saharanpur
Panipat
Rohtak
Meerut
Moradabad
New Delhi
Rahimyar Khan
Shikarpur
Sukkur
Larkana
Thar Desert
Jaisalmer
Phalodi
Bikaner
Sikar
Aligarh
Bareilly
Shahjahanpur
Mathura
Agra
Firozabad
Kanpur
Lucknow
Bahraich
Gorakhpur
Birganj
Jodhpur
Ajmer
Jaipur
Gwalior
Nawabshah
Mirpur Khas
Beawar
Bhilwara
Hyderabad
Kotah
Jhansi
Allahabad
Varanasi
Sasaram
Kharagpur
Udaipur
Chhatarpur
Satna
Rewa
Chopan
Gaya
Tilaiya
Godda
Bechampore
Rajshahi
Rann of Kutch
Patan
Gandhinagar
Sagor
Murwara
Daltonganj
Bokaro
Dhanbad
Asansol
Dhaka
Agartala
Aizawl
Comilla
Bhuj
Ujjain
Bhopal
Jabalpur
Sonhat
Ranchi
Durgapur
Jamshedpur
Kolkata
Khulna
Barisal
Chittagong
Gulf of Kutch
Ahmadabad
Jamnagar
Rajkot
Vadodara
Indore
Narmada River
Mandla
Korba
Rourkela
Sundargarh
Bilaspur
Balaghat
Raigarh
Baripada
Bhavnagar
Porbandar
Broach
Khandwa
Surat
Diu
Dand
Daman
Jalgaon
Burhanpur
Amravati
Akola
Bhilai
Nagpur
Raipur
Sambalpur
Rairakhol
Bhadrakh
Jajpur
Cuttack
Bhubaneswar
Dhule
Malegaon
Silvassa
DECCAN PLATEAU
Kanker
Nasik
Aurangabad
Parbhani
Chandrapur
Puri
Mumbai
Ahmadnagar
Nanded
Nizamabad
Jagdalpur
Berhampur
Pune
Latur
Solapur
Warangal
Vishakhapatnam
Satara
Gulbarga
Hyderabad
Ratnagiri
Kolhapur
Sangli-Miraj
Rajahmundry
Kakinada
Vijayawada
Guntur
Belgaum
Gadag
Adoni
Kurnool
Hubli
Bellary
Anantapur
Davangere
Cuddapah
Nellore
Tumkur
Tirupati
Kolar
Mangalore
Bangalore
Chennai
Mysore
Vellore
Cannanore
Pondicherry
Salem
Kozhikode
Erode
Coimbatore
Tiruppur
Trichur
Tiruchchirappalli
Karaikudi
Kochi
Madurai
Jaffna
Palk Strait
Quilon
Gulf of Mannar
Tiruvananthapuram
Nagercoil
Cape Comorin
Trincomalee
SRI LANKA
Batticaloa
Negombo
Kandy
Pidurutalagala 2524 m
Colombo
Moratuwa
Galle
Hambantota
Dondra Head
MALDIVES
Thiadhunmathi
Miladhunmadulhu
Maulhosmadulhu
Faadhippolhu
North Male Atoll
Male
Ari Atoll
Bay of Bengal
ANDAMAN SEA
Andaman Islands (India)
North Andaman
Middle Andaman
South Andaman
Port Blair
Little Andaman
Nicobar Islands (India)
Car Nicobar
Sabang
Banda Aceh
Sigli
Pantonlabu
Sumatra
Medan
INDONESIA
Strait of Melaka
Isthmus of Kra
Surat Thani
Phuket
Ranong
Dawei
Bangkok
Mergui
Bokpyin
Lanbi Island
Pathia
Tavoy
Tenasserim
Moulmein
Gulf of Martaban
Irrawaddy Delta
Cape Negrais
Yangon
Bassein
Henzada
Pegu
Prome
Sittwe
Meiktila
Myingyan
Pakokku
Monywa
Maymyo
Mandalay
Lashio
Wandagzhen
Ruili
Baoshan
Myitkyina
Dibrugarh
Tinsukia
Shillong
Cherrapunji
Mymensingh
Sylvet
Imphal
Rangpur
Gauhati
Brahmaputra River
Tezpur
Tawang
Tsona Dzong
Lhuntse Dzong
Trashigang
Thimphu
Paro
Punakha
BHUTAN
Kathmandu
Birgunj
Biratnagar
Jaigaon
Siliguri
Tista River
Ganges Delta
Hiako Kangri 6482 m
Ahmadjuma 8078 m
Rokhiara
Mt Everest 8848 m
Kula Kangri 7554 m
Lhasa
Xigaze
Gyangtse
Nam Lake
Golmud
Ulugh Muztagh 7726 m
Kunlun Mountains
Tarim Basin
Hotan
Muztagh Ata 7546 m
Kongur Tagh 7649 m
Gez
Godwin Austen (K2) 8611 m
Karakoram Range
Pamirs
Hindu Kush
Chitral
Kamet 7756 m
Himalayas
Siwalik Range
Indus River
Jhelum River
Chenab River
Ravi
Sutlej River
Yamuna River
Gandak River
Kosi River
Narmada River
Tapti River
Godavari River
Krishna River
Penner River
Cauvery River
Western Ghats
Eastern Ghats
Aravalli Range
Thar Desert
Plateau of Tibet (Xizang Plateau)
Bayan Har Mountains
Ningjing Mountains
Hengduan Mountains
Daxue Mountains
Gonga Mountain 7590 m
Xining
Lanzhou
Linxia
Qinghai Lake
Yushu
Xichang
Panzhihua
Dali
Xiaguan
Chuxiong
Wuliang Mountains
Lancang River
Mekong River
Nu River
Salween River
Irrawaddy River
Chindwin River
Naga Hills
Arakan Range
Pegu Range
Shan Plateau
Laos
Thailand
Chiang Mai
Lampang
Nayyyidaw
Taunggyi
Loikaw
Kengtung
Mong Hsat
Ye
Tavoy
Tenasserim
Myitkyina
Putao
Xiaguan
Chuxiong
Panzhihua
Xichang
Daxue Mountains
Gonga Mountain 7590 m
Qinghai Lake
Golmud
Xining
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Linxia
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Plateau of Tibet (Xizang Plateau)
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Indus River
Jhelum River
Chenab River
Ravi
Sutlej River
Yamuna River
Gandak River
Kosi River
Narmada River
Tapti River
Godavari River
Krishna River
Penner River
Cauvery River
Western Ghats
Eastern Ghats
Aravalli Range
Thar Desert
Deccan Plateau
Ganges Delta
Irrawaddy Delta
Bay of Bengal
Andaman Sea
Gulf of Martaban
Gulf of Kutch
Gulf of Mannar
Palk Strait
Strait of Melaka
Cape Comorin
Cape Negrais
Nicobar Islands (India)
Andaman Islands (India)
Lacadive Islands
Maldives
Sri Lanka
India
China
Nepal
Bhutan
Bangladesh
Myanmar
Laos
Thailand
Indonesia
Sumatra

# Middle East

FAST FACTS

## World records

### Tallest building

Burj Dubai in Dubai (D3) is the world's tallest building. Opened in 2010, the 818-metre skyscraper is more than 300 metres taller than the second tallest building, the Taipei 101 at 509 metres. The building cost $4.1 billion to construct and has more than 160 storeys. The Burj Dubai can be seen from nearly 100 kilometres away.

### Largest oil reserves

Saudi Arabia (B3) has the greatest oil reserves of any country in the world. Saudi Arabia is also home to Ghawar Field, the largest oil field in the world. Ghawar Field, which began production in 1952, produces five million barrels of oil per day. Oil has brought great wealth to the Middle East with 56 per cent of the world's oil reserves located here.

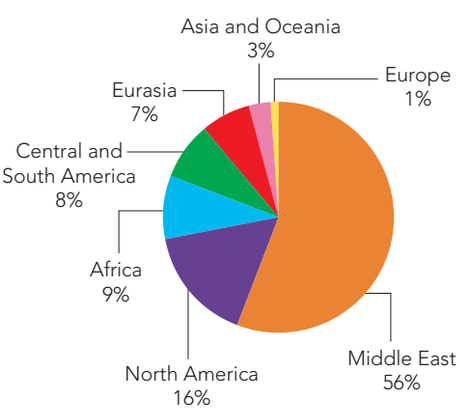
### Lowest point

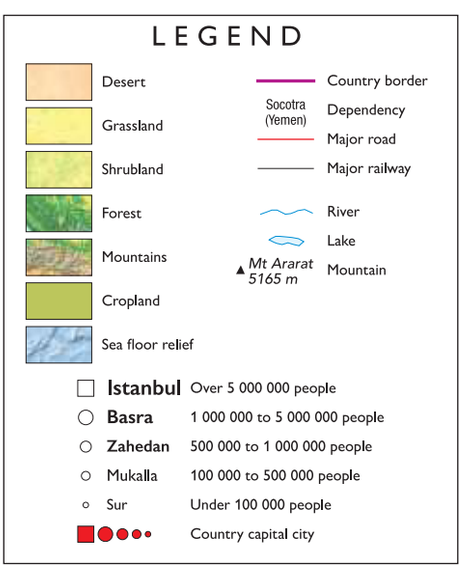
At 400 metres below sea level, the Dead Sea (B4) is the lowest point on the Earth's surface. Nothing lives in the Dead Sea as it is six times saltier than the ocean.

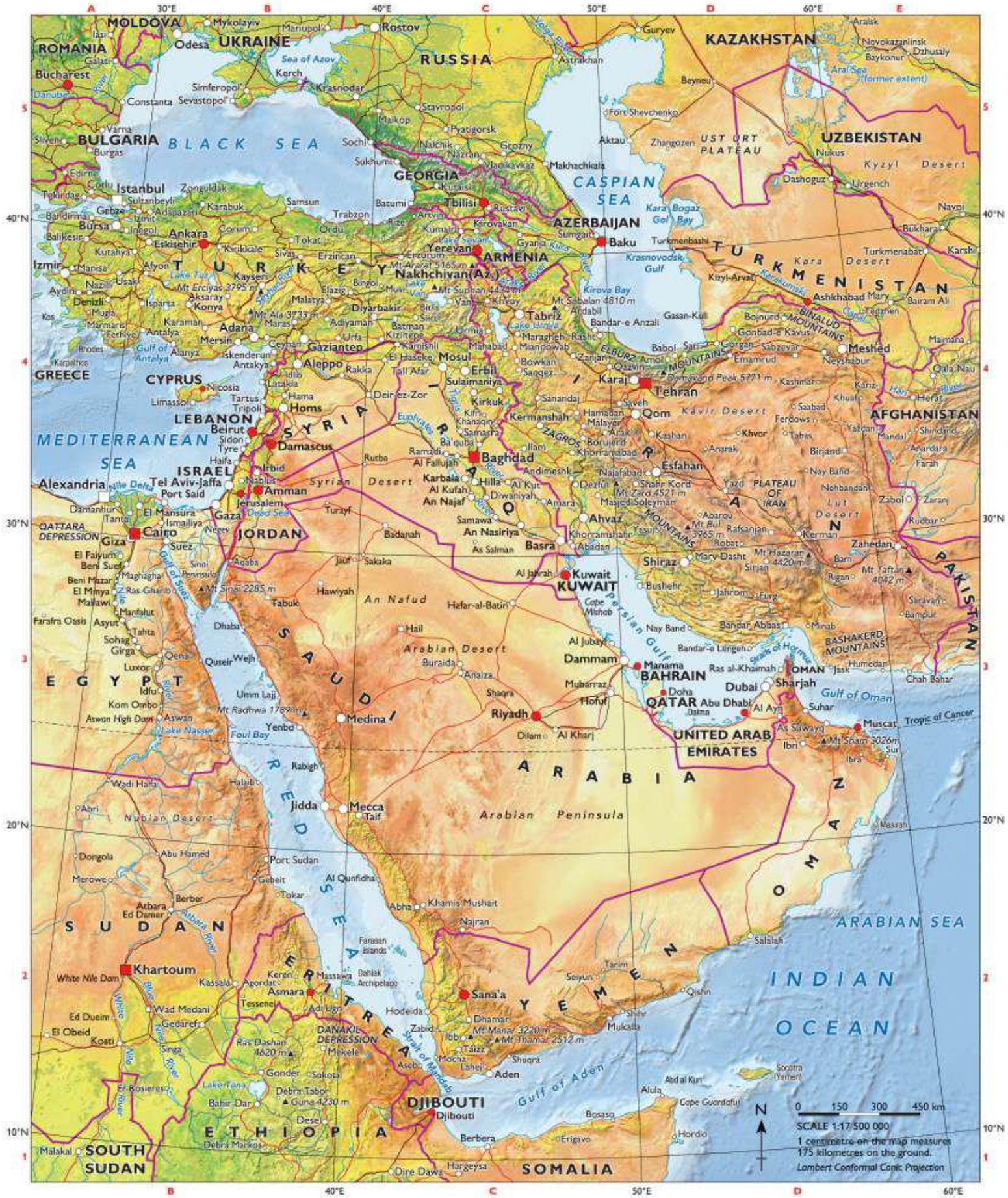
▲ Burj Dubai, the world's tallest building, towers above the surrounding buildings in Dubai.

▲ The very salty water of the Dead Sea makes it easy to float.

**WORLD: OIL RESERVES BY REGION**



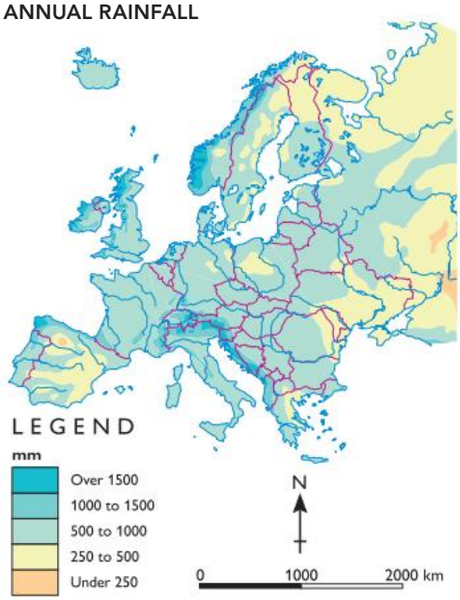

A
30°E
B
40°E
C
50°E
D
60°E
E
5
4
3
2
1
40°N
30°N
20°N
10°N
MOLDOVA
ROMANIA
Bucharest
UKRAINE
Odesa
Mykolayiv
Sea of Azov
Rostov
RUSSIA
KAZAKHSTAN
Guryev
Astrakhan
Aral Sea (former extent)
Novokazalinsk
Baykonur
Beyneu
Fort Shevchenko
BULGARIA
BLACK SEA
Varna
Burgas
Constanta
Sevastopol
Simferopol
Kerch
Krasnodar
Stavropol
Maikop
Pyatigorsk
Sochi
Sukhumi
Nalchik
Nazran
Grozny
Vladikavkaz
Makhachkala
GEORGIA
Kutaisi
Tbilisi
Rustavi
Batumi
CASPIAN SEA
Aktau
Zhangozen
UST URT PLATEAU
UZBEKISTAN
Nukus
Kyzyl Desert
Dashoguz
Urgench
Navoi
Bukhara
Karshi
Istanbul
Edirne
Tekirdag
Gebze
Izmit
Adapazari
Zonguldak
Karabuk
Bursa
Bandirma
Balikesir
Ankara
Eskisehir
Corum
Kirikkale
Samsun
Trabzon
Ordu
Rize
Tokat
Sivas
Erzincan
Erzurum
Artvin
Kumairi
Kirovakan
Lake Sevan
AZERBAIJAN
Sumgait
Baku
Gyanja
Kara Bogaz Gol Bay
Turkmenbashi
TURKMENISTAN
Kara Desert
Turkmenabat
Krasnovodsk Gulf
Kizyl-Arvat
Karakumski Canal
Ashkhabad
Mary
Bairam Ali
Tedzhen
Yerevan
ARMENIA
Mt Ararat 5165 m
Nakhchivan (Az.)
Mt Suphan 4434 m
TURKEY
Izmir
Manisa
Kutahya
Afyon
Usak
Aydin
Nazilli
Denizli
Isparta
Lake Tuz
Mt Erciyas 3795 m
Kayseri
Aksaray
Konya
Karaman
Mugla
Marmaris
Fethiye
Antalya
Gulf of Antalya
Alanya
Mersin
Adana
Mt Ala 3733 m
Maras
Malatya
Elazig
Bingol
Mus
Lake Van
Van
Diyarbakir
Batman
Siirt
Bitlis
Adiyaman
Urfa
Kiziltepe
Ceyhan
Gaziantep
Iskenderun
Antakya
Kos
Rhodes
Karpathos
GREECE
CYPRUS
Nicosia
Limassol
Khoy
Tabriz
Lake Urmia
Urmia
Maragheh
Miandowab
Mahabad
Bowkan
Saqqez
Mt Sabalan 4810 m
Ardabil
Rasht
Bandar-e Anzali
Gasan-Kuli
Sari
Babol
Amol
ELBURZ MOUNTAINS
Gorgan
Gonbad-e Kavus
Bojnurd
BINALUD MOUNTAINS
Sabzevar
Emamrud
Neyshabur
Meshed
Zanjan
Qazvin
Karaj
Tehran
Demavand Peak 5771 m
Kashmar
Qala Nau
Karez
Hari River
Herat
AFGHANISTAN
Shindand
Farah
Aleppo
Rakka
Latakia
Hama
Tartus
Tripoli
Homs
Deir ez-Zor
Kamishli
El Haseke
Tall Afar
Mosul
Erbil
Sulaimaniya
Kirkuk
Sanandaj
Hamadan
Malayer
Arak
Saveh
Qom
Kavir Desert
Kashan
Khvor
Tabas
Birjand
Anarak
LEBANON
Beirut
Sidon
Tyre
Damascus
SYRIA
MEDITERRANEAN SEA
Haifa
ISRAEL
Irbid
Nablus
Tel Aviv-Jaffa
Jerusalem
Amman
Dead Sea
Gaza
Port Said
Alexandria
Nile Delta
Damanhur
Tanta
El Mansura
Ismailiya
Negev
Euphrates River
Tigris River
Ramadi
Al Fallujah
Samarra
Ba'quba
Khanaqin
Kifri
Kermanshah
Ilam
Borujerd
Khorramabad
ZAGROS MOUNTAINS
Baghdad
IRAQ
Rutba
Syrian Desert
Karbala
Hilla
Al Kut
Al Kufah
An Najaf
Diwaniyah
Amara
Andimeshk
Dezful
Najafabad
Esfahan
Shahr Kord
Mt Zard 4521 m
Masjed Soleyman
Yazd
PLATEAU OF IRAN
Nay Band
Nehbandan
Zabol
Zaranj
Lut Desert
IRAN
Ahvaz
Abarqu
Mt Bul 3965 m
Rafsanjan
Kerman
Zahedan
Rudbar
Turayf
JORDAN
Badanah
Samawa
An Nasiriya
As Salman
Basra
Khorramshahr
Abadan
Yasuj
Robat
Marv Dasht
Shiraz
Mt Hazaran 4420 m
Sirjan
Bam
Mt Taftan 4042 m
PAKISTAN
QATTARA DEPRESSION
Cairo
Giza
Suez
Sinai Peninsula
Aqaba
Jauf
Sakaka
Al Jahrah
Kuwait
KUWAIT
Bushehr
Jahrom
Fasa
Rigan
El Faiyum
Beni Suef
Maghagha
Beni Mazar
El Minya
Mallawi
Manfalut
Ras Gharib
Gulf of Suez
Mt Sinai 2285 m
Hawiyah
Tabuk
An Nafud
Hafar-al-Batin
Cape Mishab
Persian Gulf
Nay Band
Bandar Abbas
Minab
Saravan
Bampur
Farafra Oasis
Asyut
Tahta
Sohag
Girga
Dhaba
Hail
Al Jubayl
Bandar-e Lengeh
Strait of Hormuz
BASHAKERD MOUNTAINS
Qena
Quseir
Wejh
SAUDI ARABIA
Arabian Desert
Buraida
Dammam
Manama
BAHRAIN
Ras al-Khaimah
OMAN
Jask
Humedan
Chah Bahar
Luxor
EGYPT
Idfu
Nile River
Unaiza
Shaqra
Mubarraz
Hofuf
Doha
QATAR
Abu Dhabi
Dalma
Dubai
Sharjah
Al Ayn
Suhar
Gulf of Oman
Kom Ombo
Aswan
Aswan High Dam
Lake Nasser
Foul Bay
Umm Lajj
Mt Radhwa 1769 m
Yenbo
Medina
Riyadh
Dilam
Al Kharj
UNITED ARAB EMIRATES
As Suwayq
Ibri
Muscat
Mt Sham 3026 m
Sur
Ibra
Tropic of Cancer
Rabigh
Wadi Halfa
Abri
Halaib
Nubian Desert
Jidda
Mecca
Taif
Arabian Peninsula
Masirah
Dongola
Abu Hamed
Port Sudan
Merowe
Gebeit
Al Qunfidha
Tokar
Atbara
Berber
Ed Damer
Atbara River
SUDAN
Abha
Khamis Mushait
Najran
RED SEA
Farasan Islands
OMAN
ARABIAN SEA
Salalah
Khartoum
White Nile Dam
Kassala
Agordat
Keren
Massawa
Dahlak Archipelago
Asmara
Tessenei
ERITREA
Adi Ugri
Sana'a
YEMEN
Tarim
Seiyun
Qishn
INDIAN OCEAN
Wad Medani
Gedaref
Ed Dueim
El Obeid
Kosti
White Nile
Blue Nile River
Hodeida
Zabid
Dhamar
Mt Manar 3220 m
Mt Thamar 2512 m
Ibb
Taizz
Mocha
Lahej
Aden
Shuqra
Shihr
Mukalla
Ras Dashan 4620 m
DANAKIL DEPRESSION
Mekele
Strait of Mandab
Assab
Singa
Gonder
Sokota
Lake Tana
Bahir Dar
Debra Tabor
Guna 4230 m
El Rosieres
Gulf of Aden
Socotra (Yemen)
Abd al Kuri
Alula
Cape Guardafui
DJIBOUTI
Djibouti
Desei
Bosaso
ETHIOPIA
Debra Markos
Berbera
Erigavo
Hordio
Malakal
SOUTH SUDAN
Dire Dawa
Hargeysa
SOMALIA
N
0
150
300
450 km
SCALE 1:17 500 000
1 centimetre on the map measures 175 kilometres on the ground.
Lambert Conformal Conic Projection

# Europe: Environments

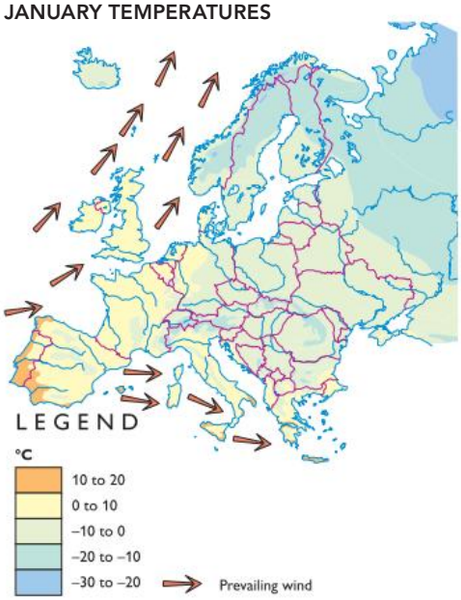
Europe is the world's second smallest continent. The countries of Europe range in size from Russia, the largest country in the world, to Vatican City, the smallest at just 0.4 square kilometres. People have had more impact on Europe than on any other continent. Much of Europe's natural environment has been replaced with cropland, and its population density is second only to that of Asia. Over 70 per cent of Europe's population live in urban areas in some of the most densely populated regions of the world.

◀ Europe contains some of the most famous and influential cities in the world. Paris, in France, is the most visited city in the world.

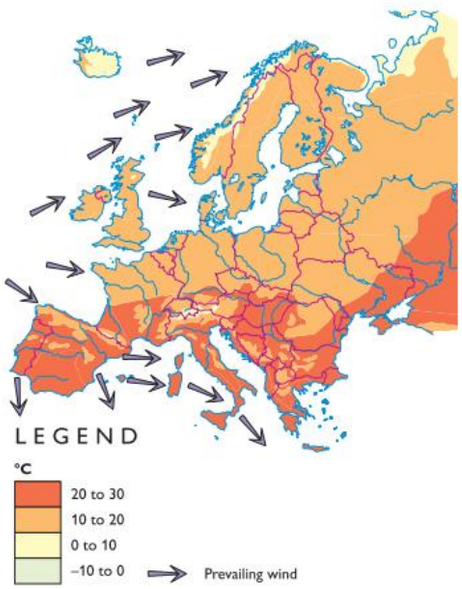
ANNUAL RAINFALL



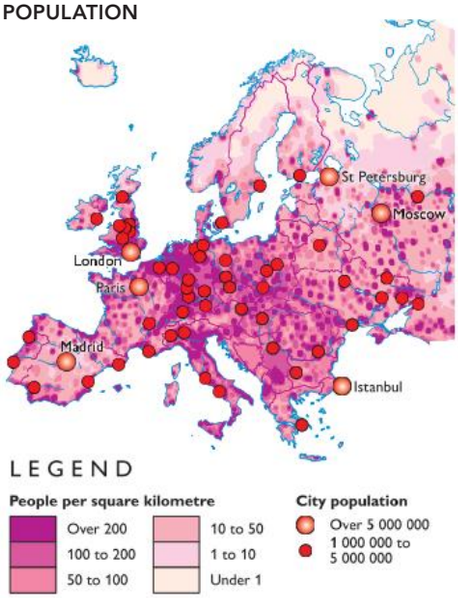

JANUARY TEMPERATURES



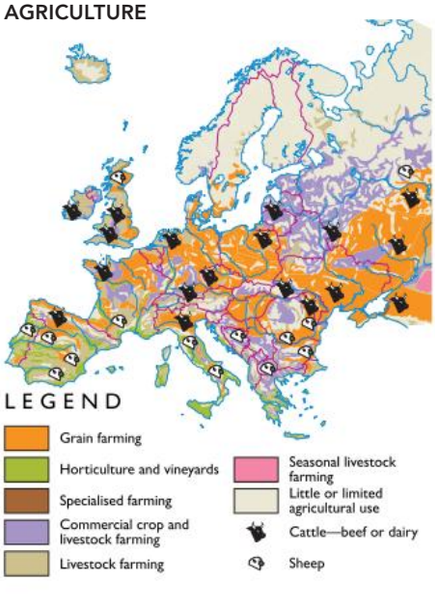

JULY TEMPERATURES



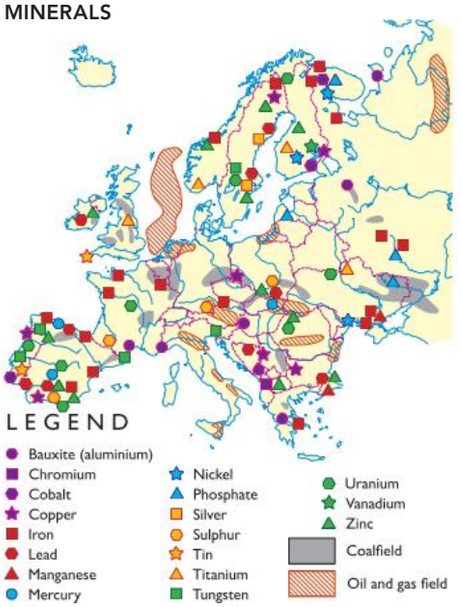

POPULATION




AGRICULTURE




MINERALS



Hammerfest is the world's northernmost town – 70°7'N of the Equator.

At 17 098 242 square kilometres, Russia is the world's largest country by area.

Moscow, with a population of 13 600 000 is Europe's largest city.

Liechtenstein is the world's richest country with US$122 100 of goods and services produced for each member of the population.

Vatican City, the home of the Roman Catholic Church, is the world's smallest country at just 0.4 square kilometres. It also has the world's smallest population with just 830 residents.

The highest temperature ever recorded in Europe was registered at Athens in July 1977, when the mercury reached 48 degrees Celsius.

The Caspian Sea is the world's largest lake, covering 371 800 square kilometres.

BARENTS SEA
NORWEGIAN SEA
Arctic Circle
Hammerfest
WHITE SEA
ATLANTIC OCEAN
Lake Ladoga
RUSSIA
Volga River
Moscow
NORTH SEA
BALTIC SEA
Ural River
Paris
Danube River
LIECHTENSTEIN
THE ALPS
Volga River
Sea of Azov
CASPIAN SEA
Mt Elbrus 5642 m
BLACK SEA
VATICAN CITY
MEDITERRANEAN SEA
TYRRHENIAN SEA
AEGEAN SEA
IONIAN SEA
Athens

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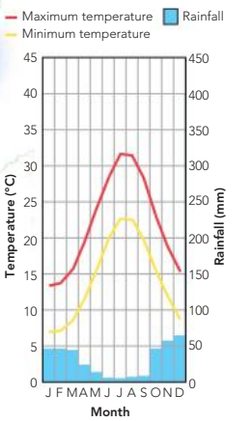
0 300 600 900 km

SCALE 1:27 000 000

1 centimetre on the map measures 270 kilometres on the ground.

*Lambert Conformal Conic Projection*

**ATHENS: CLIMATE GRAPH**




**LEGEND**

- Grassland
- Shrubland
- Forest
- Tundra
- Ice cap
- Mountains
- Cropland
- Urban area
- Sea floor relief
- Country border
- Largest city
- Town
- Highest mountain

# Europe: Physical

# Europe: Political


* Former Yugoslav Republic of Macedonia

# Northern Europe

FAST FACTS

## World records

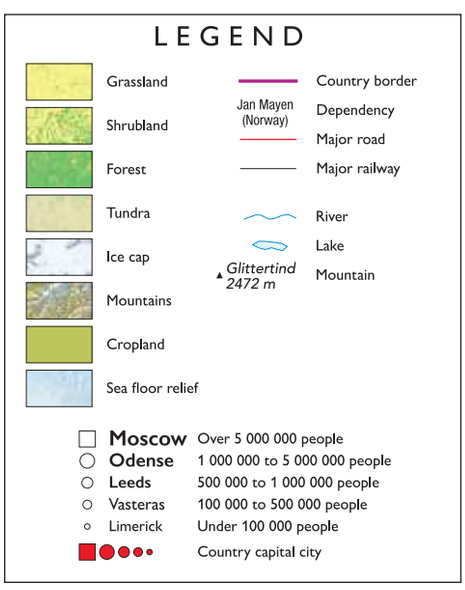
### Greatest use of renewable energy

Iceland is the only country in the world that obtains all of its electricity needs from renewable sources. Hydro power is responsible for 87 per cent of Iceland's electricity and geothermal power produces 13 per cent. Most homes in Iceland also directly use the hot water located one to three kilometres underground to heat their homes. Water at temperatures of 150 degrees Celsius is produced in this volcanic region (B3).

### Largest offshore wind farm

Located in the estuary of the Thames River in the United Kingdom, London Array (D2) opened in late 2012. The wind farm covers an area of 100 square kilometres and the 175 turbines deliver power to over 500 000 homes in greater London.

▲ The London Array (D2) wind farm is located in the estuary of the Thames River in the United Kingdom.





BARENTS SEA
KANIN PENINSULA
Chesha Bay
KOLA PENINSULA
WHITE SEA
LAPLAND
MOUNTAINS
KJOLEN
FINLAND
Gulf of Bothnia
SCANDINAVIAN PENINSULA
NORWAY
SWEDEN
Gulf of Finland
ESTONIA
LATVIA
LITHUANIA
BALTIC SEA
DENMARK
RUSSIA
BELARUS
UKRAINE
POLAND
GERMANY
Lake Onega
Lake Ladoga
Gulf of Riga
Skagerrak
Kattegat
North Cape
Lofoten Islands
Helsinki
St Petersburg
Moscow
Stockholm
Oslo
Copenhagen
Goteborg
Riga
Tallinn
Vilnius
Minsk
Warsaw
Berlin
Kyiv
Kharkiv
Hamburg
Dusseldorf
Cologne
Hannover
Dortmund
Bremen
Kaliningrad
(RUSSIA)
60°N
50°N
10°E
20°E
30°E
40°E
50°E

# Southern Europe

FAST FACTS

## World records

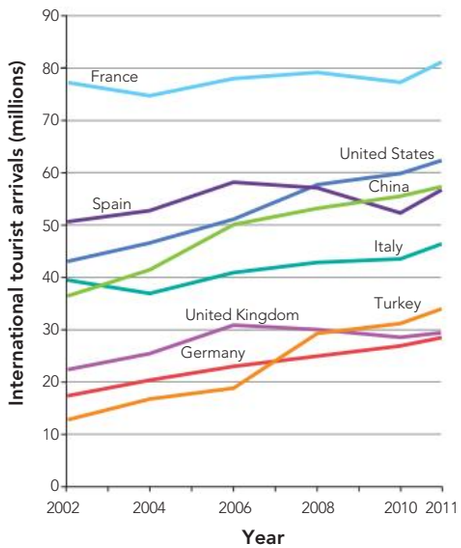
### World's richest country

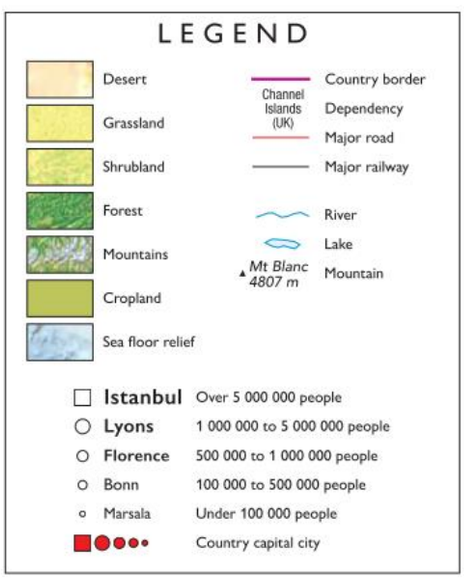
Liechtenstein (E4) is the world's richest nation, with US$122 100 of goods and services produced annually for each member of the population.

### Top tourist destination

France (D4) is the world's top tourist destination, with over 80 million international tourists annually. Southern European countries are popular tourist destinations. France continues to be the country of choice for vacation, followed by Spain, with Italy, Germany, Turkey and the United Kingdom all ranking in the top eight. The proximity of these countries makes them popular short-haul destinations.

**WORLD: TOP TOURIST DESTINATIONS**





* Former Yugoslav Republic of Macedonia

# Russia and Eurasia

FAST FACTS

## World records

### Largest lake

Covering 371 800 square kilometres, the Caspian Sea (E3) is the world's largest lake. Once an open sea, the Caspian became enclosed by land about 5.5 million years ago. The Caspian Sea is a freshwater lake in its northern regions where it is fed by major rivers such as the Volga and Ural. It is saltier on its southern shores.

### Deepest lake

Lake Baikal (K4) has the largest volume of fresh water in the world, holding 20 per cent of the world's surface water. With a depth of 1.6 kilometres, it is the deepest lake in the world. The long, thin lake (see satellite image below), which formed in an ancient rift valley, was declared a World Heritage site in 1996.

▲ Image of an ice-covered Lake Baikal in Siberia, Russia

LEGEND

- Desert
- Grassland
- Shrubland
- Forest
- Highland
- Tundra
- Mountains
- Cropland
- Sea floor relief
- Country border
- Svalbard (Norway) Dependency
- Major road
- Major railway
- River
- Lake
- ▲ Grandioznyy 4807 m Mountain

- Shenyang Over 5 000 000 people
- Karaj 1 000 000 to 5 000 000 people
- Orenburg 500 000 to 1 000 000 people
- Orsk 100 000 to 500 000 people
- Farah Under 100 000 people
- Country capital city


ARCTIC OCEAN
BEAUFORT SEA
CHUKCHI SEA
EAST SIBERIAN SEA
LAPTEV SEA
KARA SEA
BERING SEA
SEA OF OKHOTSK
SEA OF JAPAN
SCALE 1:22 500 000
1 centimetre on the map measures 225 kilometres on the ground.
Lambert Azimuthal Equal Area Projection
0 200 400 600 km
RUSSIA
MONGOLIA
CHINA
JAPAN
NORTH KOREA
SOUTH KOREA
Alaska (USA)
Nome
Kotzebue Sound
Bering Strait
Wrangel Island
Chukot Peninsula
Gulf of Anadyr
CHUKOT RANGE
Cape Shelagski
Pevek
Anadyr
Cape Navarin
Ayon Island
New Siberian Islands
Cape Arkticheskiy
Severnaya Zemlya
Bolshevik Island
Cape Chelyuskin
Vilkitski Strait
Zemlya Franz Josef Land
Cape Zhelaniya
Mt Blednaya 1052 m
Svalbard (Norway)
White Island
Yamal Peninsula
Dikson
Taimyr Peninsula
BYRRANGA MOUNTAINS
Lake Taimyr
NORTH SIBERIAN LOWLANDS
Nordvik
Tit-Ary
Tiksi
Lyakhov Island
Laptev Strait
Dmitri
Delta of the Lena
Yana Bay
Chokurdakh
Cherskiy
Markovo
Mt Ledyanaya 2562 m
KORYAK RANGE
Druzhina
Indigirka
Kolyma
Gizhiga
Evensk
Karagin Island
Gulf of Shelikhov
Palana
Klyuchevskaya Sopka 4749 m
Kamchatka Peninsula
Petropavlovsk-Kamchatski
SREDINNYY RANGE
Magadan
Tauy Bay
Mus-Khaya 2959 m
Pobeda 3147 m
CHERSKI RANGE
KOLYMA RANGE
Verkhoyansk
VERKHOYANSK RANGE
Natara
Zhigansk
Khandyga
Sangar
Yakutsk
Okhotsk
Ayan
Shantar Islands
Udsk Bay
DZUGDZHUR RANGE
Cape Yelizavety
Okha
Nikolayevsk
Sakhalin
Chumikan
Chagda
Aldan
Amga River
Lena River
Olekma River
Vitim River
Mirnyy
Lensk
Bakhta
Tura
Yenisey
Lower Tunguska River
Stony Tunguska River
Pur River
Taz River
Nyda
Novy Port
Tazovskiy
Igarka
Dudinka
Norilsk
Karaul
Volochanka
Khatanga River
Kheta River
Olenek River
PUTORANA MOUNTAINS
CENTRAL SIBERIAN PLATEAU
Ekonda
Vilyui River
Lower Tunguska River
Tomsk
Novosibirsk
Kemerovo
Krasnoyarsk
Prokopyevsk
Novokuznetsk
Abakan
Biysk
Tayshet
Bratsk
Ust-Kut
Bratsk Reservoir
Kirenga River
Lesosibirsk
Angara River
Uda River
Kirensk
PATOM HIGHLANDS
NORTH BAIKAL PLATEAU
VITIM PLATEAU
Lake Baikal
Tulun
Grandioznyy 2922 m
Cheremkhovo
Angarsk
Irkutsk
Ulan-Ude
Munku Sardyk 3491 m
WESTERN SAYAN
Kyzyl
Mt Belukha 4503 m
Ubsu Lake
Lake Hovsgol
Ulegei
Ulangom
Muren
Selenga River
Darhan
Hovd
Altay
ALTAY MOUNTAINS
Dorgon Lake
Uliastay
Asaralta 2776 m
Ulan Bator
Tsetserlig
KHANGAI MOUNTAINS
Altay
Bayankhongor
Arbaikhere
Mandalgobi
Sainshanda
Turfan
TURFAN DEPRESSION
Hami
Dalandzadagad
Gobi Desert
Xilin Hot
Erenhot
LANG MOUNTAINS
Tamsag Bulag
Hohhot
Baotou
Datong
Beijing
Tangshan
Zhangjiakou
Qinhuangdao
Dalian
Nampo
Pyongyang
Seoul
Kyoto
Nagoya
Shizuoka
Hamamatsu
Tokyo
Chiba
Yokohama
Honshu
Hokkaido
Muroran
Hakodate
Otaru
Sapporo
Aomori
Hachinohe
Morioka
Akita
Niigata
Fukushima
Nagaoka
Hitachi
Sendai
Kushiro
Obihiro
Asahikawa
Takikawa
Wakkanai
Kitami
Yuzhno-Sakhalinsk
Kuril Islands
Tatar Strait
Poronaisk
Komsomolsk-na-Amure
Sovetskaya Gavan
BUREISKIY RANGE
Khabarovsk
Birobidzhan
Nikolayevsk
Amur River
Ussuri River
SIKHOTE MOUNTAINS
Svobodny
Belogorsk
Blagoveshchensk
Zeya River
Shilka River
Mogocha
Trans-Siberian Railway
STANOVOY RANGE
GREATER HINGGAN MOUNTAINS
YABLONOVY RANGE
Chita
Aginskoye
Borzya
Sukhebator
Aksha
Nenjiang
Yakeshi
Hailar
Manzhouli
Hulun Lake
Uuldza
Choybalsan
Kerulen River
Undurkhan
Baruun-Urt
Zalantun
Yichun
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Jiamusi
Shuangyashan
Qiqihar
Daqing
Harbin
Jixi
Qitaihe
Lake Khanka
Olga
Songhua River
Ulanhot
Baicheng
Mudanjiang
Ussuriisk
Nakhodka
Vladivostok
Changchun
Jilin
Dunhua
Yanji
Tongliao
Liaoyuan
Chongjin
Liao River
Shenyang
Fuxin
Fushun
Benxi
Panjin
Jinzhou
Anshan
Dandong
Huludao
Yingkou
Hamhung
Orenburg
Omsk
Tomsk
Novosibirsk
Krasnoyarsk
Irkutsk
Chita
Khabarovsk
Yakutsk
Magadan
Petropavlovsk-Kamchatski
Ulan Bator
Beijing
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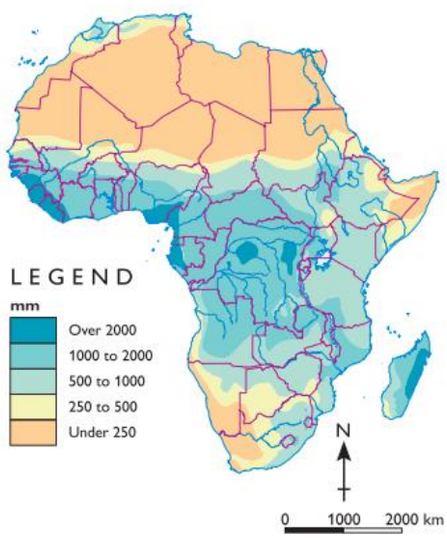
# Africa: Environments

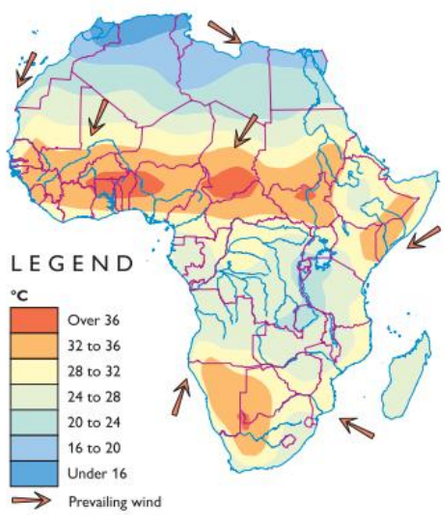
Africa is a land of contrasts – from the world's largest hot desert, the Sahara, to the lush tropical rainforests of central Africa. Seventy-five per cent of Africans work in agriculture, but increasing numbers are being attracted to the fast-growing cities. Living conditions in many African countries are among the worst in the world. Swaziland has the world's lowest life expectancy at just 32 and Angola experiences the world's highest death rate of 25 deaths per 1000 population in a year.

▲ Open savannah is tropical grasslands scattered with shrubs and isolated trees. Africa's famous savannah region is found in a wide band on either side of the Equator. Here, animals such as lions, zebras, giraffes, elephants, and many types of ungulates (animals with hooves) graze and hunt.

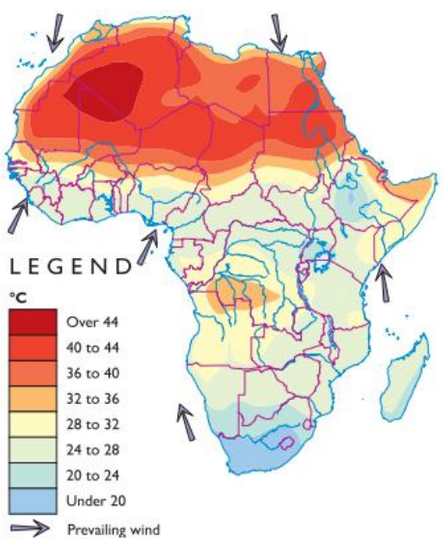
### ANNUAL RAINFALL



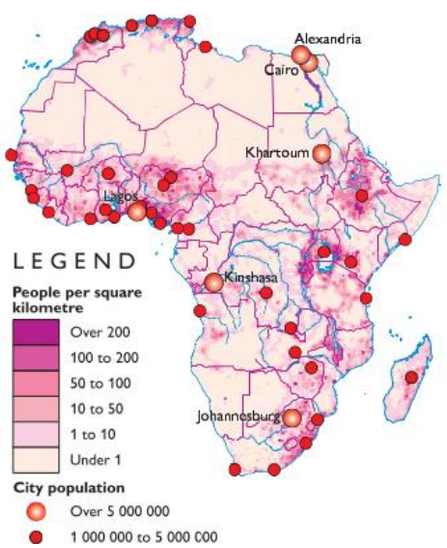

### JANUARY TEMPERATURES



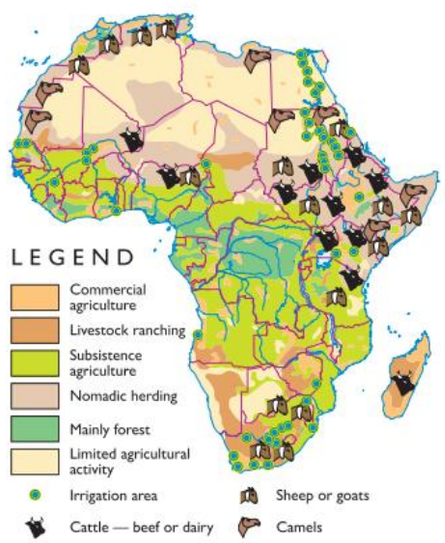

### JULY TEMPERATURES



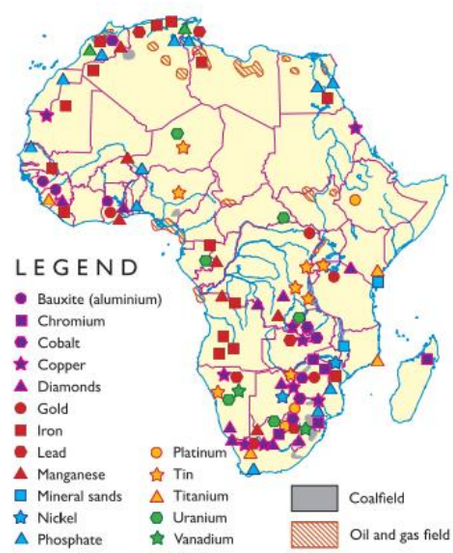

### POPULATION




### AGRICULTURE



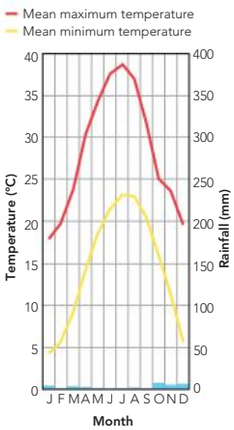

### MINERALS



Al Aziziyah holds the record for the highest temperature ever recorded in Africa: 57.7 degrees Celsius.

Located at the beginning of the Nile Delta, Cairo is Africa's largest city with a population in excess of 15 000 000 people.

**AL AZIZIYAH: CLIMATE GRAPH**




The Sahara Desert is the world's largest desert. At over 9 000 000 square kilometres, the Sahara is about the same size as Europe.

The Nile River is the world's longest river at 6695 kilometres.

Africa's highest mountain, Mount Kilimanjaro, has lost 80 per cent of its snow cover in the last century.

**LEGEND**

- Desert
- Open savannah (mostly grassland)
- Woody savannah (grassland with trees)
- Forest
- Mountains
- Cropland
- Urban area
- Sea floor relief
- Country border
- Disputed border
- Largest city
- Town
- Highest mountain

N

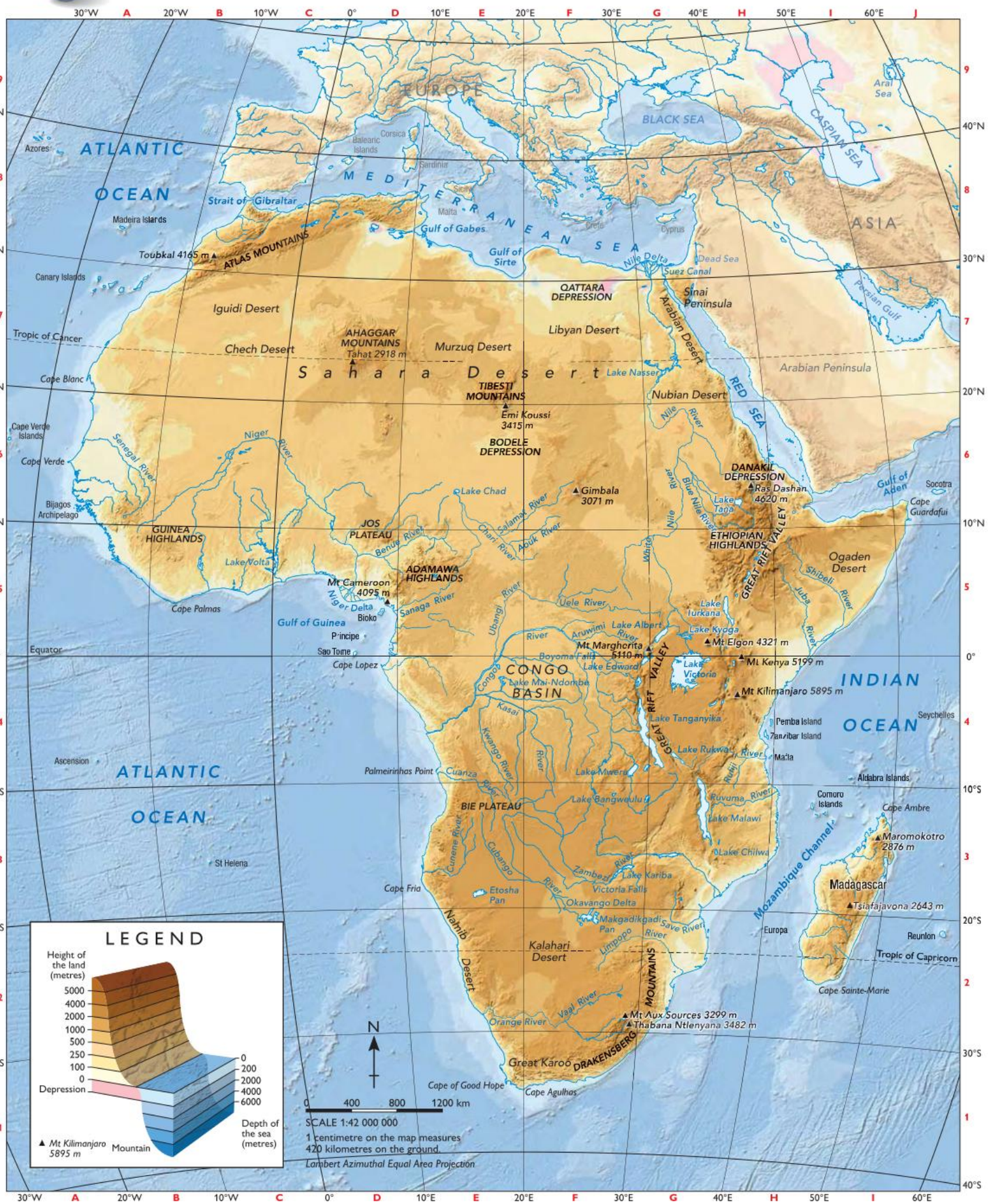
0 400 800 1200 km

SCALE 1:42 000 000

1 centimetre on the map measures 420 kilometres on the ground.

*Lambert Azimuthal Equal Area Projection*

# Africa: Physical



# Africa: Political

# Northern Africa

FAST FACTS

## World records

### Longest river

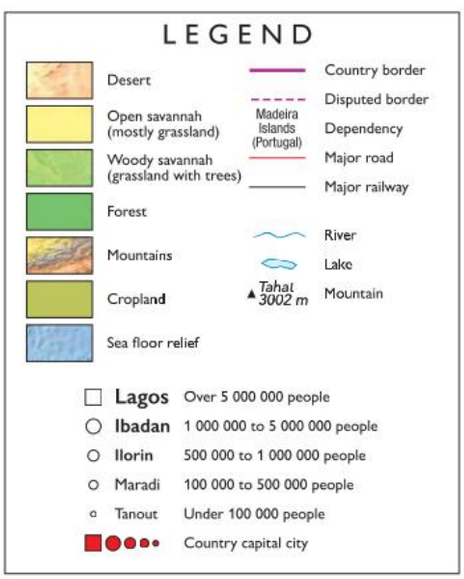
At 6695 kilometres, the Nile River (G3) is the world's longest river. Ancient Egyptian and modern civilisations have relied on the Nile to bring life to the arid desert of Egypt. It has two major tributaries, the White Nile and the Blue Nile, and ends in a large delta before flowing into the Mediterranean Sea.

### Largest desert

The Sahara Desert (D4) covers an area of 9 269 000 square kilometres. The world's largest hot desert is expanding southward due to a process known as desertification, the permanent change of productive land into desert.


▲ The Nile River Delta

▲ An oasis in Morocco provides sanctuary for people and animals in the arid Sahara.





10°E
20°E
30°E
40°E
50°E
60°E
E
F
G
H
I
5
30°N
4
20°N
3
10°N
2
0°
1
ITALY
GREECE
TURKEY
CASPIAN SEA
Sicily
IONIAN SEA
SEA OF CRETE
Crete
Bizerte
Tunis
Gulf of Hammamet
Sousse
Kairouan
Sfax
Gulf of Gabes
Gabes
MALTA
MEDITERRANEAN SEA
CYPRUS
SYRIA
IRAN
LEBANON
IRAQ
ISRAEL
JORDAN
Az Zawiyah
Tripoli
Al Khums
Misratah
Gharyan
Nalut
Yafran
Benghazi
Al Bayda
Darnah
Al Marj
Tubruq (Tobruk)
Sirte
Gulf of Sirte
Ajdabiya
Derj
Es Sider
Sirte Desert
Waddan
Tagrifet
Marada
Awjilah
LIBYA
Ubari Desert
Brak
Sebha
Ubari
Murzuq
Calanscio Sand Sea
Libyan Desert
Tazerbo Oasis
Murzuq Desert
Rebiana Sand Sea
El Jauf
Alexandria
Nile Delta
Port Said
El Mansura
El Alamein
Tanta
Cairo
Giza
Suez
QATTARA DEPRESSION
El Fayum
Beni Suef
Mt Sinai 2285 m
El Minya
Mallawi
Asyut
Ain Dalla
Farafra Oasis
Sohag
Girga
Qena
Great Sand Sea
Luxor
Idfu
Aswan
EGYPT
Aswan High Dam
Toshka Lakes
Lake Nasser
Tarfawi Oasis
El Shab
Misaha Oasis
Wadi Halfa
Halaib
Arabian Desert
RED SEA
Foul Bay
PERSIAN GULF
BAHRAIN
QATAR
UNITED ARAB EMIRATES
SAUDI ARABIA
Desert
Chirfa
TIBESTI MOUNTAINS
Zouar
Emi Koussi 3415 m
Achegour
Bilma
Ounianga Kebir
Faya-Largeau
Fada
ENNEDI PLATEAU
BODELE DEPRESSION
El Gir
Dongola
Merowe
Merowe Dam
El Atrun Oasis
Abri
Nubian Desert
Abu Hamed
Port Sudan
Gebeit
Atbara
Adarama
Farasan Islands
Dahlak Archipelago
YEMEN
ERITREA
Asmara
Adi Ugri
Kassala
Khartoum
White Nile Dam
Blue Nile
White Nile
Wad Medani
Gedaref
DANAKIL DEPRESSION
Mekele
Ras Dashan 4620 m
Assab
Gulf of Aden
Socotra (Yemen)
Cape Guardafui
Nguigmi
PLAIN OF BORNU
Lake Chad
Maiduguri
N'Djamena
Abeche
Moussoro
Ati
El Geneina
El Fasher
Darfur
SUDAN
Gimbala 3071 m
El Obeid
Kosti
Gonder
Guna 4230 m
Lake Tana
Bahir Dar
Er Roseires
Nyala
Mongo
Dikwa
Massenya
Maroua
Gombi
Kaele
Chari River
Logone River
Salamat River
Aouk River
Birao
Abyei
Bitlhan 4154 m
Debre Markos
Dire Dawa
Awash River
VALLEY
Awash
Harer
Hargeysa
Sheikh
Berbera
Erigavo
Hordio
Bender Beila
Candala
Cape Guardafui
DJIBOUTI
Djibouti
Addis Ababa
Nazret
Dembidolo
Gambela
Jima
Hosseina
Soddu
Lake Shala
Batu 4307 m
ETHIOPIAN HIGHLANDS
RIFT
Ogaden Desert
Daga Medo
Kurali
Haskul
Garoe
Gabredarre
Galkayu
Eil
Kugno
Lake Abaya
Lake Chamo
Gughe 4200 m
Bako
Omo River
GREAT
Negelli
Dawa River
Lake Stefanie
Lake Turkana
Lokitaung
Lodwar
Moyale
Dolo
Belet Uen
Harardera
Bulo Burti
Baidoa
Takabba
El Wak
Bardera
Mogadishu
Merca
Brava
Jamama
Kismayu
SOMALIA
Adamawa Highlands
Ngaoundere
Garoua
Moundou
Ouanda Djale
Ndele
Ouadda
Raga
Sudd
Wau
Bahr al Jabal
SOUTH SUDAN
Bor
Tambura
Juba
Kol River
Bahr al Ghazal
CENTRAL AFRICAN REPUBLIC
Bossangoa
Bozoum
Bambari
Zemio
Mambere River
Kotto River
Bomu River
Ubangi River
Sanaga River
Bangui
Berberati
Kembe
Yaounde
Mbaiki
Libenge
Bondo
Uele River
Tambura
Arua
Gulu
Pakwach
Isiro
Bumba
Gemena
Dja River
Ruki River
Aruwimi River
Lake Albert
UGANDA
Soroti
Lake Kyoga
Mt Elgon 4321 m
Marsabit
Maralal
KENYA
Lodwar
Lokitaung
Lake Turkana
Moyale
Mega
Takabba
Dolo
Belet Uen
Harardera
Bulo Burti
Baidoa
Bardera
Mogadishu
Merca
Brava
Jamama
Kismayu
Liboi
Eldoret
Mt Kenya 5199 m
Nakuru
Kisumu
Lake Victoria
Nairobi
Bura
Tana River
Galana River
Lamu
INDIAN OCEAN
Impfondo
Ouesso
Congo River
Lindi River
Aruwimi River
Makokou
Mbandaka
Kisangani
Bayoma Falls
Lake Edward
Butembo
Margherita 5109 m
Kampala
Tororo
Mbarara
Ogooue River
Makoua
Busira River
Tshuapa River
Lomami River
Ikela
Ubundu
Boende
Lake Tumba
Lake Mai-Ndombe
Inongo
Francoville
Camboma
Moma
Lake Kivu
Goma
Kigali
RWANDA
Musoma
Mwanza
Bukavu
Kindu
Muhinga
BURUNDI
Bujumbura
Uvira
Nyanza
Shinyanga
Mt Kilimanjaro 5895 m
Arusha
Moshi
Lake Eyasi
Mombasa
Kigoma
Usoke
Tabora
Tanga
Zanzibar
Dodoma
Lake Tanganyika
Mpanda
Rungwa
Morogoro
Dar-es-Salaam
Iringa
Mafia
Brazzaville
Pointe Noire
(to ANGOLA)
Cabinda
Boma
Matadi
Kinshasa
Kasai River
Lukenie River
Kwilu River
Kikwit
Bandundu
Ilebo
Kibombo
Lusambo
Kananga
Tshikapa
Mbuji-Mayi
Mwene-Ditu
Kalemie
Luapula River
Luama River
Congo River
DEMOCRATIC REPUBLIC OF CONGO
ANGOLA
TANZANIA

# Southern Africa

FAST FACTS

## World records

### Largest inland delta

At 15 000 square kilometres, Botswana's Okavango Delta (C3) is the largest inland delta in the world. The annual summer rains in Angola swell the waters of the Okavango River that flows 1200 kilometres through Angola, Namibia and into Botswana. As it meets the shallow pan of Botswana it spreads out and produces an abundance of life as rivers and swamps fill. The river eventually reaches the Kalahari Desert and disappears into the desert sands.

▲ The Okavango Delta reaches towards the Kalahari Desert.

▲ The Okavango Delta is one of the world's largest wetlands. It was listed as a wetland of international significance at the Convention on Wetlands of International Importance, called the Ramsar Convention. This commits the government of Botswana to protecting the wetland and its biodiversity.

▲ The surge of water brings a surge in tourism, Botswana's largest industry after diamond production.


### LEGEND

- Desert
- Open savannah (mostly grassland)
- Woody savannah (grassland with trees)
- Forest
- Mountains
- Cropland
- Sea floor relief
- Country border
- Reunion (France) — Dependency
- Major road
- Major railway
- River
- Lake
- ▲ Mt Kenya 5199 m — Mountain
- Lagos — Over 5 000 000 people
- Durban — 1 000 000 to 5 000 000 people
- Blantyre — 500 00 to 1 000 000 people
- Paarl — 100 000 to 500 000 people
- Tsane — Under 100 000 people
- Country capital city

20°E
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50°E
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10°N
0°
10°S
20°S
30°S
60°E
6
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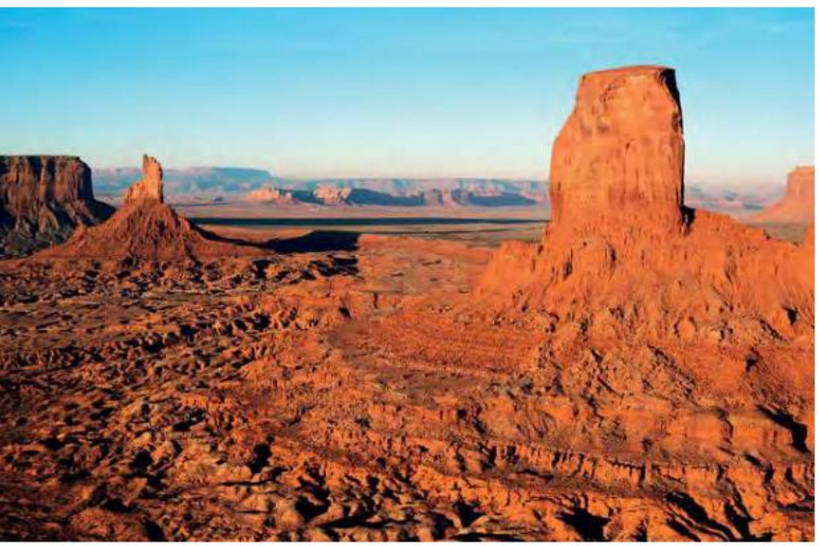
4
3
2
1
Gimbala 3071 m
Mongo
C H A D
Massenya
Chari
Salamat River
Aouk River
Birao
Nyala
S U D A N
Abyei
Er Rosieres
Nile River
Lake Tana
Bahir Dar
Gonder
Guna 4230 m
Dese
Birhan 4154 m
Debre Markos
VALLEY
DJIBOUTI
Djibouti
Gulf of Aden
Socotra (Yemen)
Candala
Cape Guardafui
Las Khoreh
Hordio
Berbera
Erigavo
Lai
Moundou
Ouanda Djale
Ndele
Ouadda
Raga
White
Lol River
Sudd
SOUTH SUDAN
Wau
Gambela
Addis Ababa
Dembidolo
Nazret
Awash
Awash River
Dire Dawa
Harer
Sheikh
Hargeysa
Haskul
Garoe
Bender Beila
Eil
ETHIOPIAN HIGHLANDS
Daga Medo
Kurali
E T H I O P I A
Jima
Hosseina
RIFT
Soddu
Batu 4307 m
Ogaden Desert
Kugno
Gabredarre
Galkayu
CENTRAL AFRICAN REPUBLIC
Bossangoa
Bozoum
Bambari
Tambura
Bor
Bahr-al-Jebel
Gughe 4200 m
Bako
Lake Abaya
Lake Chamo
Omo River
GREAT
Negelli
Dawa
Zemio
River
Bomu
Kotto River
Ubangi
Kembe
Bangui
Juba
Lokitaung
Lake Stefanie
Lake Turkana
Mega
Moyale
Takabba
Dolo
Belet Uen
Harardera
Mbaiki
Libenge
Bondo
Uele
River
Lodwar
S O M A L I A
Bulo Burti
Gemena
Bumba
Rubi
River
Isiro
River
Arua
Gulu
Pakwach
Lake Albert
UGANDA
VALLEY
El Wak
Baidoa
Impfondo
Ouesso
Aruwimi
Lindi
River
Bunia
Soroti
Lake Kyoga
Marsabit
Bardera
Mogadishu
Merca
Brava
Congo
DEMOCRATIC
Mbandaka
Kisangani
Boyoma Falls
Margherita 5109 m
Kampala
Tororo
Mt Elgon 4321 m
Maralal
Eldoret
K E N Y A
Liboi
INDIAN
Busira
River
Butembo
Jamama
Kismayu
Tshuapa
Lomami
Boende
Ikela
Ubundu
Lubutu
Lake Edward
Mbarara
Lake
Victoria
Kisumu
Nakuru
Mt Kenya 5199 m
Bura
Tana River
Gamboma
Inongo
Moma
Goma
RWANDA
Kigali
Musoma
Nairobi
Galana
Lamu
OCEAN
Lake Mai-Ndombe
REPUBLIC
Kindu
Lake Kivu
Bukavu
Muhinga
Mwanza
Mt Kilimanjaro 5895 m
River
SEYCHELLES
Bandundu
Lukenie
River
Lualaba
BURUNDI
Uvira
Bujumbura
Shinyanga
Arusha
Moshi
Lake Eyasi
Mombasa
Kasai
Ilebo
Kibombo
Luama River
Nyanza
Kigoma
Victoria
Praslin
Mahe
Lusambo
River
Usoke
Tabora
Tanga
Amirante Islands
Kikwit
OF CONGO
Kananga
Tshikapa
Mbuji-Mayi
Mwene-Ditu
Kalemie
Lake Tanganyika
Mpanda
T A N Z A N I A
Dodoma
Morogoro
Zanzibar
Dar-es-Salaam
Rungwa
Lake Rukwa
Great Ruaha
River
Iringa
Rufiji River
Mafia
Alphonse Island
Coetivy
Lulua River
Pweto
Kamina
Bukama
Lake Mweru
Mbala
Mbeya
Matandu River
Kilwa Kivinje
Cuango
Saurimo
Malange
Quitapa
Chipata
Karonga
Njombe
Liwale
Lindi
Aldabra Atoll
Cosmoledo Atoll
Providence Atoll
Luau
Kolwezi
Likasi
Mansa
Kasama
Lake Bangweulu
Livingstonia
Songea
Negomano
Mtwara
Farquhar Atoll
N G O L A
Luena
Lubumbashi
Mpika
Mzuzu
Mocimboa da Praia
COMOROS
Agalega Islands (Mauritius)
BIE PLATEAU
Cazombo
Mwinilunga
Lucusse
Chingola
Mufulira
Kitwe
Ndola
Luanshya
Milepa
Lake Malawi
Lugenda River
Mueda
Moroni
Njazidja
Nzwani
Mwali
Mayotte (France)
Isles Glorieuses (France)
Cape Ambre
Antsiranana
Tempue
Cubango
Cuito
Luanginga
Lumbala
N'giumbo
Menongue
Kasempa
Kafue River
Lusaka
Chipata
Lilongwe
Marrupa
Lichinga
Pemba
Montepuez
M O Z A M B I Q U E
Mitsio
Be
Ambanja
Maromokotro 2876 m
Analalava
Kalabo
Mongu
Z A M B I A
Kaoma
Mumbwa
Mazabuka
Kabwe
Lake Chilwa
Zomba
Nampula
Nacala
Mozambique
Antalaha
Cuvelai
River
Mavinga
Cuando
Senanga
Nanzhila
Choma
Monze
Zambezi
Lake Cabora Bassa
Tete
Blantyre
Gurue
Angoche
Mahajanga
Marovoay
Sesheke
Lake Kariba
Livingstone
Chinhoyi
Bindura
Harare
Chitungwiza
Sena
Mocuba
Quelimane
Chinde
Antongil Bay
Andriba
Fenoarivo Atsinanana
Ambatondrazaka
Toamasina
Kuring Kuru
Ondangua
Mucusso
Victoria Falls
Kadoma
Z I M B A B W E
Chivhu
Mutare
Chimoio
River
Maintirano
Ankavandra
Antananarivo
Mozambique Channel
M A D A G A S C A R
Karakuwisa
Tsumeb
Etosha Pan
Grootfontein
Okavango Delta
Gweru
Bulawayo
Beira
Tsiafajavona 2643 m
Antsirabe
Otjiwarongo
Lake Ngami
Maun
Plumtree
Gwanda
Masvingo
Morondava
Malaimbandy
Ambositra
MAURITIUS
Port Louis
N A M I B I A
Makgadikgadi Pan
Letlhakane
Ghanzi
Francistown
Bobonong
Save River
Nova Mambone
Manja
Mangoky River
Mananjary
Fianarantsoa
St-Denis
Reunion (France)
Karibib
Gobabis
Windhoek
Rehoboth
B O T S W A N A
Serowe
Shoshong
Mahalapye
Palapye
Louis Trichardt
Messina
Limpopo
Chicualacuala
Mabote
Cape Sao Sebastiao
Chigubo
Morombe
Ihosy
Boby Peak 2658 m
Europa (France)
Sakaraha
Toliara
Farafangana
Kalahari Desert
Aranos
Tsane
Molepolole
Gaborone
Lobatsi
Mochudi
Polokwane
Potgietersrus
Nylstroom
Maxixe
Inhambane
Mariental
Warmbad
Pretoria
Lydenburg
Mhluzi
Nelspruit
Xai-Xai
Maputo Bay
Maputo
Bekily
Trafonomby 1957 m
Tolanaro
Ambovombe
Cape Sainte-Marie
Tsabong
Johannesburg
Potchefstroom
Klerksdorp
Witbank
Nigel
Mbabane
Manzini
SWAZILAND
Volksrust
Helmeringhausen
Rietfontein
Fish River
Kuruman
Vereeniging
Karasburg
Warmbad
Upington
Vaal
Welkom
Harrismith
Newcastle
Dundee
Ladysmith
Alexander Bay
Orange River
Pofadder
Griquatown
Kimberley
Bloemfontein
Maseru
Botshabelo
LESOTHO
Pietermaritzburg
Springbok
Prieska
Hondeklipbaai
Sakrivier
Carnarvon
De Aar
Aliwal North
Matatiele
Kokstad
Durban
Margate
Vanrhynsdorp
S O U T H   A F R I C A
Umtata
St Helena Bay
Great Karoo
Beaufort West
Graaff Reinet
Queenstown
Cradock
Stutterheim
King William's Town
East London
Grahamstown
Paarl
Oudtshoorn
Kirkwood
Cape Town
Stellenbosch
George
Port Elizabeth
Simonstown
Mosselbaai
Cape of Good Hope
Cape Agulhas

# North America: Environments



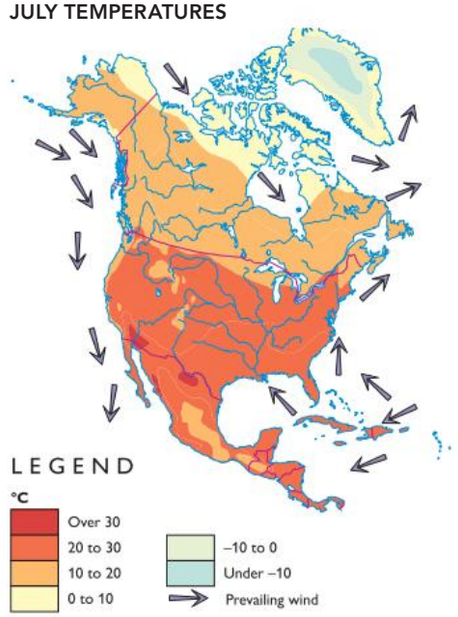
The North American continent stretches from the Arctic Circle in the north almost to the Equator in the south. It has a wide variety of environments. In the Arctic, temperatures on the ice caps can plunge to below –60 degrees Celsius. In the south-west of the continent, temperatures in the desert can soar to almost 60 degrees Celsius. The continent contains some of the largest urban areas in the world, with the north-eastern United States of America (USA) containing an urban area that stretches for over 650 kilometres from Boston in the north to Washington DC in the south.

◀ Hot deserts cover the dry south-west of the USA and northern Mexico. These regions are characterised by little or no vegetation and distinctive weathered landforms. These buttes are in Monument Valley, Arizona.

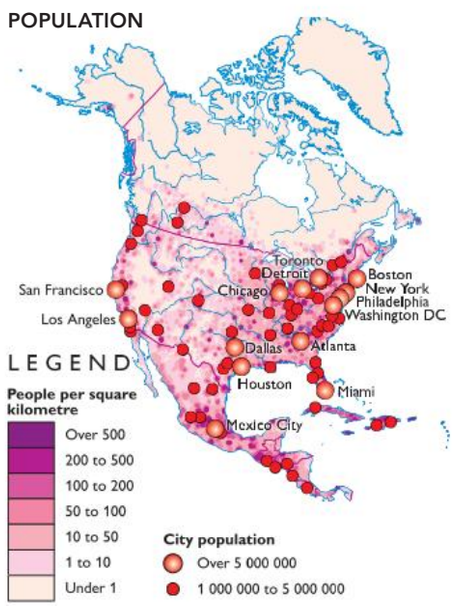
ANNUAL RAINFALL


JANUARY TEMPERATURES

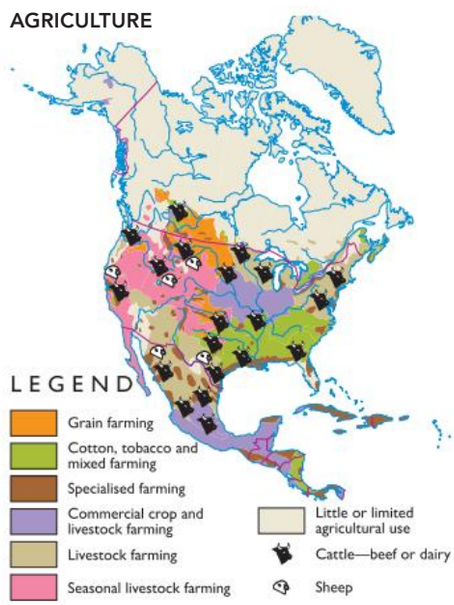

JULY TEMPERATURES



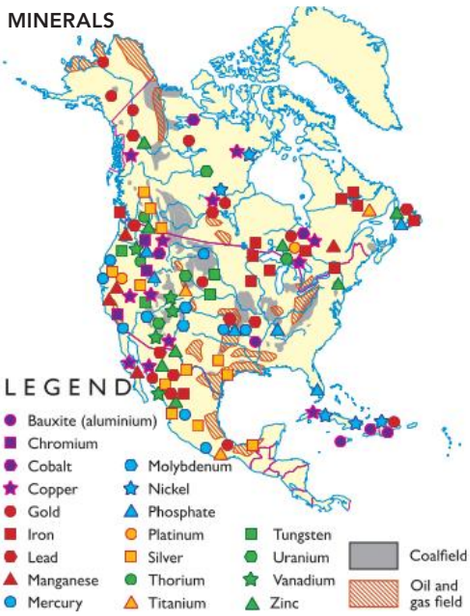

POPULATION




AGRICULTURE

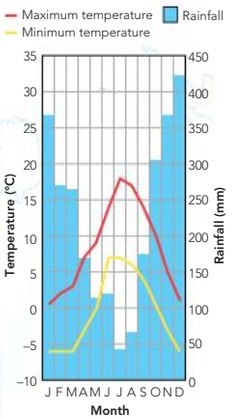



MINERALS



Greenland is the world's largest island at 2 166 086 square kilometres.

**MOUNT RAINIER: CLIMATE GRAPH**




More than 31 metres of snow fell at Mount Rainier in 1971–72, the highest ever recorded in the world.

At 3769 kilometres, St Lawrence Seaway is the world's longest inland shipping route.

Lake Superior, covering 82 414 square kilometres, is the world's largest freshwater lake.

The Grand Canyon is the world's largest gorge, ranging from 6 to 29 kilometres in width and up to 1.8 kilometres deep.

ARCTIC OCEAN
BEAUFORT SEA
BERING SEA
Kalaallit Nunaat (Greenland)
Arctic Circle
Yukon River
Mt McKinley 6194 m
Mackenzie River
ROCKY MOUNTAINS
LABRADOR SEA
PACIFIC OCEAN
Mt Rainier 4392 m
Great Basin
Missouri River
Lake Superior
St Lawrence Seaway
Grand Canyon
Chihuahuan Desert
Rio Grande
Mississippi River
ATLANTIC OCEAN
Gulf of Mexico
Tropic of Cancer
Mexico City
CARIBBEAN SEA

**LEGEND**

- Desert
- Grassland
- Shrubland
- Forest
- Highland
- Tundra
- Ice cap
- Mountains
- Cropland
- Urban area
- Sea floor relief
- Country border
- Largest city
- Mountain

N

0 400 800 1200 km

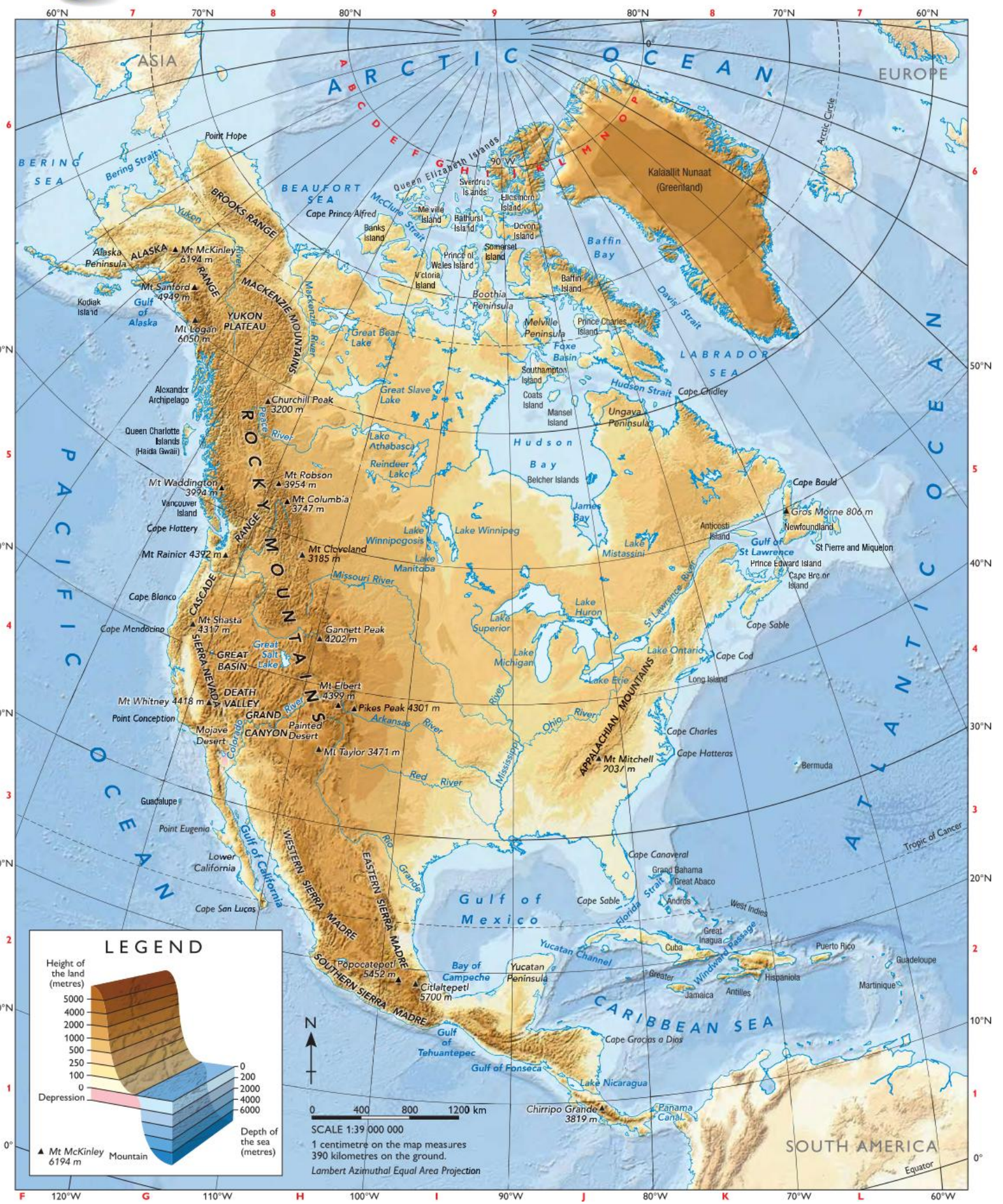
SCALE 1:39 000 000

1 centimetre on the map measures 390 kilometres on the ground.

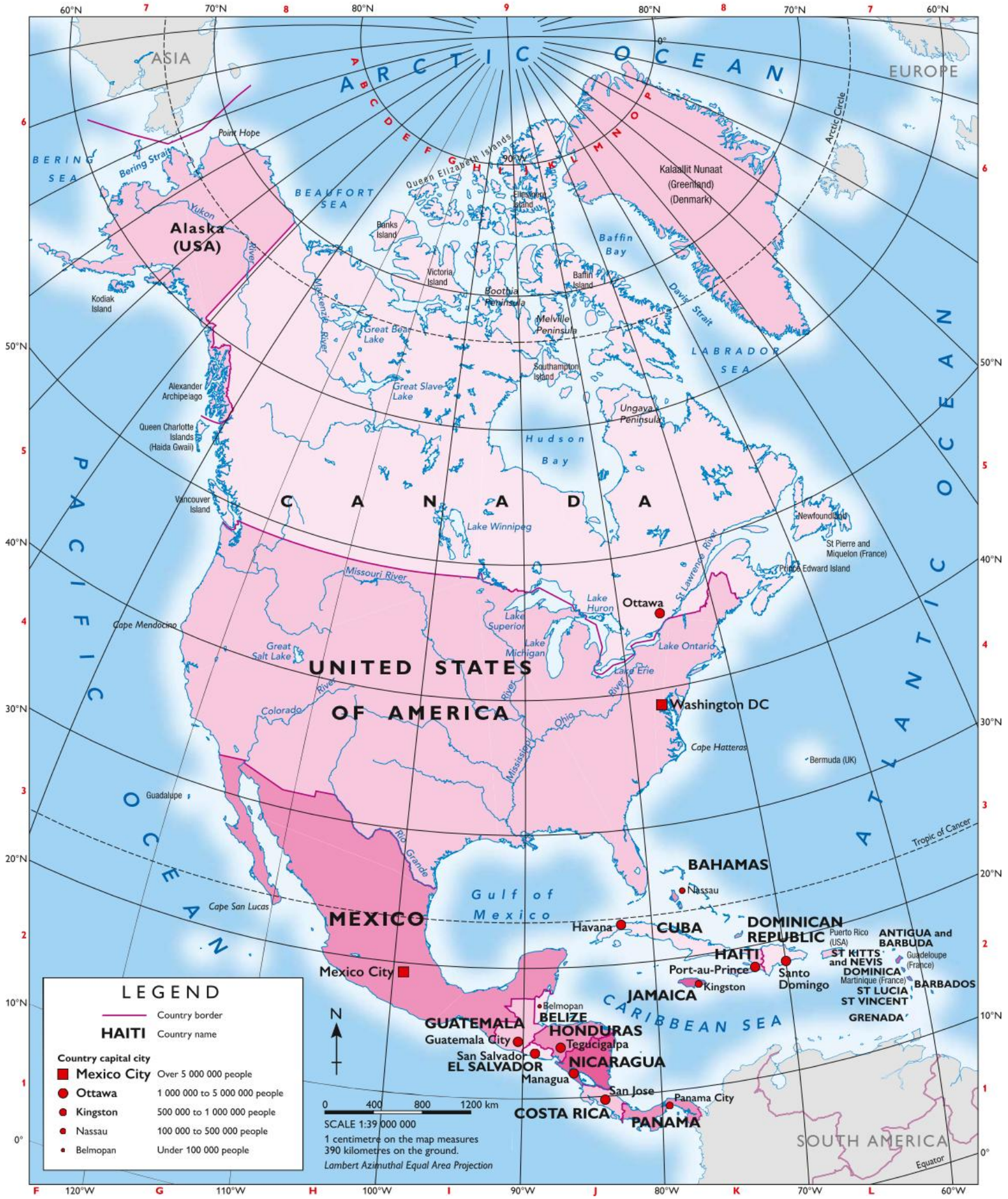
*Lambert Azimuthal Equal Area Projection*

Mexico City, with 19 000 000 people, is North America's largest city. It is also one of the most polluted cities in the world.

# North America: Physical



# North America: Political



# Canada and Greenland

FAST FACTS

## World records

### Largest island

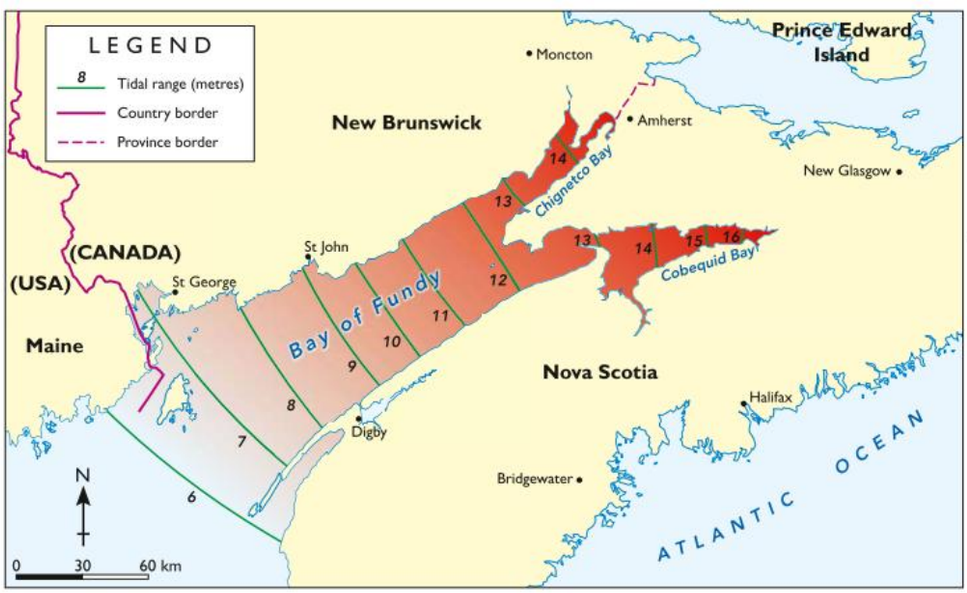
Kalaallit Nunaat, or Greenland (O5), is the world's largest island. Covering 2 166 086 square kilometres, Kalaallit Nunaat is owned by Denmark – 50 times smaller than the island. An ice sheet covers 80 per cent of the island and large glaciers are a feature. In eastern Greenland, glaciers have cut a long U-shaped valley that has been drowned by the ocean to form Scoresby Sund (Q5), the world's longest fjord. The Scoresby Sund fjord is 350 kilometres long and up to 1500 metres deep.

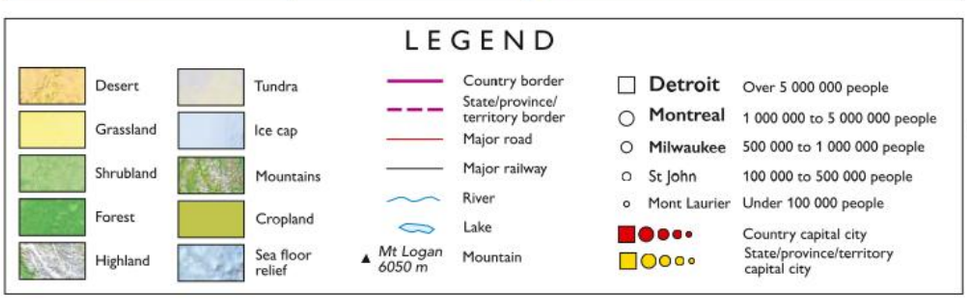
### Biggest tidal change

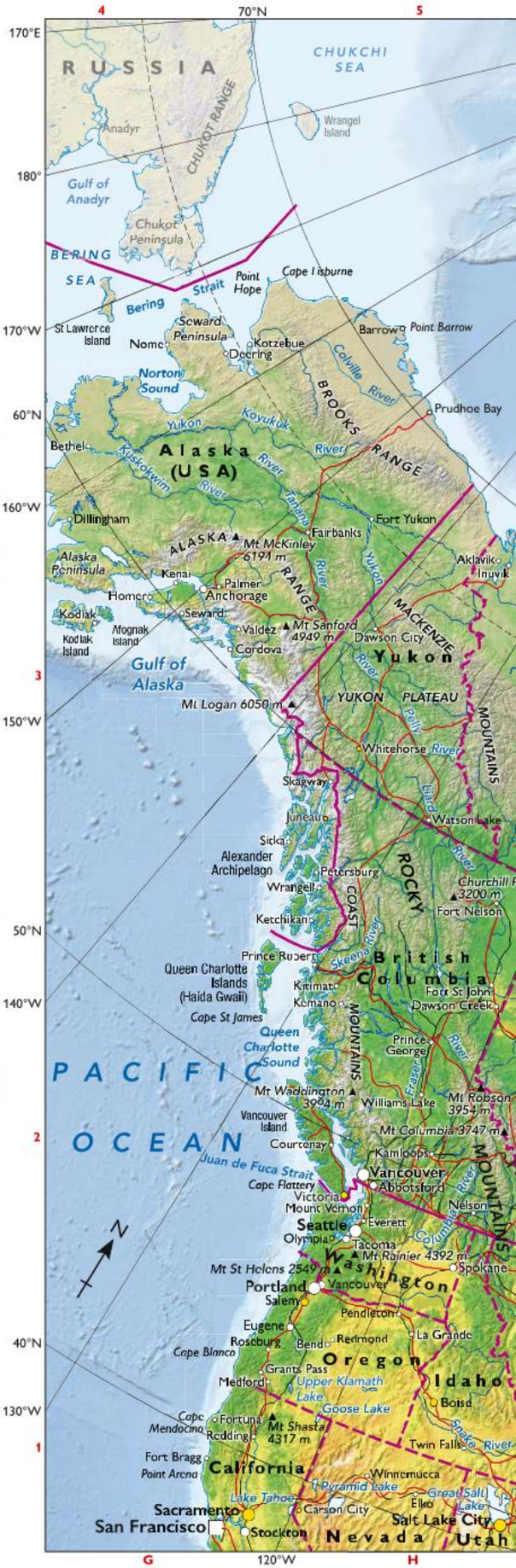
The biggest change in the depth of water between low and high tide occurs at the Bay of Fundy (M2) in Nova Scotia, Canada. Twice a day 100 billion tonnes of seawater flow in and out of the Bay of Fundy. This is more than the combined flow of the world's freshwater rivers. The narrow, funnel-shaped inlet causes changes in depth of up to 16 metres, making life interesting for boating.

▲ The difference between high and low tide at the Bay of Fundy

BAY OF FUNDY




ARCTIC OCEAN
ATLANTIC OCEAN
Kalaallit Nunaat (Greenland) (Denmark)
ICELAND
Magnetic North Pole
Queen Elizabeth Islands
Sverdrup Islands
Parry Islands
BEAUFORT SEA
Baffin Bay
Davis Strait
LABRADOR SEA
Hudson Bay
Foxe Basin
Ungava Peninsula
Nunavut
Northwest Territories
Alberta
Saskatchewan
Manitoba
Ontario
Quebec
Newfoundland and Labrador
Prince Edward Island
Nova Scotia
New Brunswick
Maine
Vermont
New Hampshire
Massachusetts
Rhode Island
Connecticut
New York
Pennsylvania
New Jersey
Montana
North Dakota
Minnesota
South Dakota
Wisconsin
Michigan
Wyoming
Nebraska
Iowa
UNITED STATES OF AMERICA
CANADA
Edmonton
Calgary
Saskatoon
Regina
Winnipeg
Churchill
Yellowknife
Iqaluit
Nuuk
Ottawa
Montreal
Toronto
Boston
New York
Chicago
Minneapolis
Detroit
Cleveland
Philadelphia
Pittsburgh
Buffalo
Halifax
St John's
SCALE 1:21 500 000
1 centimetre on the map measures 215 kilometres on the ground.
Lambert Conformal Conic Projection

# United States of America

FAST FACTS

## World records

### Largest gorge

Carved by the Colorado River, the 446-kilometre-long Grand Canyon (B2) ranges from 6 to 29 kilometres in width and is up to 1.8 kilometres deep.





100°W
90°W
80°W
70°W
D
E
F
G
40°N
30°N
C A N A D A
Manitoba
Ontario
Quebec
New Brunswick
Maine
Vermont
New Hampshire
Massachusetts
Rhode Island
Connecticut
New York
Pennsylvania
New Jersey
Delaware
Maryland
Virginia
West Virginia
North Carolina
South Carolina
Georgia
Florida
Alabama
Mississippi
Louisiana
Tennessee
Kentucky
Ohio
Indiana
Illinois
Michigan
Wisconsin
Minnesota
Iowa
Missouri
Arkansas
Oklahoma
Texas
Kansas
Nebraska
North Dakota
South Dakota
STATES OF AMERICA
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Gulf of Mexico
ATLANTIC OCEAN
BAHAMAS
CUBA
Winnipeg
Thunder Bay
Ottawa
Montreal
Toronto
Buffalo
Detroit
Chicago
Milwaukee
Minneapolis
St Paul
Cleveland
Pittsburgh
Philadelphia
New York
Boston
Washington DC
Baltimore
Richmond
Norfolk
Atlanta
Charlotte
Raleigh
Greensboro
Nashville
Memphis
Birmingham
Jacksonville
Miami
Tampa
Orlando
New Orleans
Houston
San Antonio
Dallas
Fort Worth
Austin
Oklahoma City
Kansas City
St Louis
Indianapolis
Columbus
Cincinnati
Louisville
Havana
Nassau
0 150 300 450 km
SCALE 1:13 500 000
1 centimetre on the map measures
135 kilometres on the ground.
Lambert Conformal Conic Projection
N

# Central America and the Caribbean

FAST FACTS

## World records

### Largest underwater sinkhole

The Great Blue Hole is located on Lighthouse Reef (D2), a small atoll 100 kilometres off the coast of Belize. The largest underwater sinkhole in the world has a diameter of more than 300 metres and is 125 metres deep. It was formed by the collapse of a series of caves that flooded as sea levels rose at the end of the last ice age. The Great Blue Hole is popular with divers and is part of the Belize Barrier Reef Reserve System, a World Heritage site.

▲ The Great Blue Hole off Belize

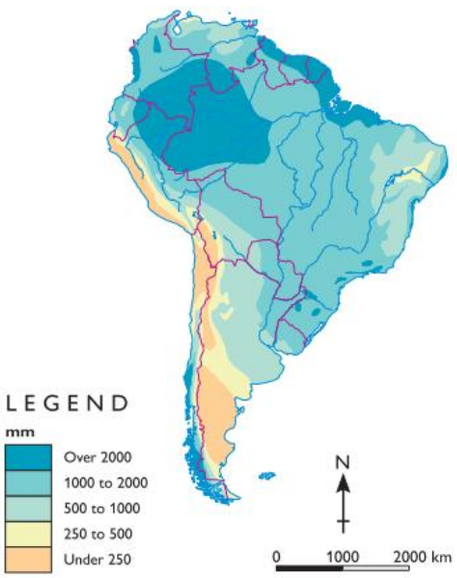

D
80°W
E
70°W
F
60°W
G
4
3
2
1
30°N
20°N
10°N
Tennessee
Knoxville
Winston-Salem
Greensboro
Durham
North Carolina
Raleigh
Charlotte
APPALACHIAN MOUNTAINS
Mt Mitchell 2037 m
Fayetteville
Greenville
Rock Hill
South Carolina
Columbia
Jacksonville
Onslow Bay
Wilmington
Cape Hatteras
Cape Fear
Long Bay
Gadsden
Anniston
Athens-Clarke
Augusta
Atlanta
Macon
Columbus
Charleston
Georgia
Montgomery
Savannah
Albany
Dothan
Valdosta
Brunswick
Fort Walton Beach
Tallahassee
Jacksonville
Panama City
Cape San Blas
Apalachee Bay
Gainesville
Ocala
Daytona Beach
Orlando
Cape Canaveral
Tampa
Clearwater
St Petersburg
Melbourne
Florida
Bradenton
Fort Pierce
Grand Bahama
Lake Okeechobee
West Palm Beach
Cape Coral
Coral Springs
Naples
Fort Lauderdale
Pembroke Pines
Hollywood
Miami
Great Abaco
Eleuthera
Cape Sable
Key West
Florida Keys
Florida Strait
Andros
Nassau
New Providence
BAHAMAS
Cat Island
San Salvador
Rum Cay
South Andros
Great Exuma
Long Island
Crooked Island
Mayaguana
Acklins Island
Caicos Islands (UK)
Turks Islands (UK)
Little Inagua
Great Inagua
Bermuda (UK)
ATLANTIC OCEAN
Tropic of Cancer
CUBA
Havana
Matanzas
Pinar del Rio
Santa Clara
Cape San Antonio
Isle of Youth
Cienfuegos
Bay of Pigs
Sancti Spiritus
Ciego de Avila
Camaguey
Victoria de las Tunas
Holguin
Antilla
Bayamo
Guantanamo
Manzanillo
Palma Soriano
Santiago de Cuba
Cozumel Island
Cayman Islands (UK)
Little Cayman
Cayman Brac
Cape Cruz
Grand Cayman
DOMINICAN REPUBLIC
Windward Passage
Cap-Haitien
Puerto Plata
Santiago de los Caballeros
San Francisco de Macoris
La Vega
Duarte Pk 3174 m
San Pedro de Macoris
La Romana
Gonaives
HAITI
Gonave Island
Carrefour
Port-au-Prince
San Cristobal
Santo Domingo
Barahona
Hispaniola
Mona Passage
Montego Bay
Port Antonio
Spanish Town
Portmore
Kingston
JAMAICA
San Juan
Mayaguez
Carolina
Ponce
Puerto Rico (USA)
Virgin Islands (UK)
Road Town
Charlotte Amalie
St Croix
Anguilla (UK)
St Martin (France)
Barbuda
St Kitts
Basseterre
St John's
Antigua
ANTIGUA and BARBUDA
ST KITTS and NEVIS
Nevis
Montserrat (UK)
Guadeloupe (France)
Point-a-Pitre
Basse-Terre
Marie Galante
Leeward Islands
DOMINICA
Roseau
Martinique (France)
Fort-de-France
ST LUCIA
Castries
BARBADOS
Bridgetown
Windward Islands
Kingstown
ST VINCENT
Grenadines
GRENADA
St George's
Tobago
Scarborough
Galera Point
TRINIDAD and TOBAGO
Port of Spain
San Fernando
Trinidad
CARIBBEAN SEA
Roatan
Caratasca Lagoon
HONDURAS
Puerto Cabezas
NICARAGUA
Matagalpa
Providencia (Colombia)
San Andres (Colombia)
Lake Managua
Managua
Masaya
Bluefields
Lake Nicaragua
San Juan del Sur
Puntarenas
Nicoya Peninsula
San Jose
Puerto Limon
Chirripo Grande 3819 m
COSTA RICA
Gulf of Mosquitos
Almirante
Colon
San Miguelito
Panama City
Panama Canal
Baru 3475 m
David
PANAMA
Point Burica
Gulf of Chiriqui
Chitre
Las Tablas
Gulf of Panama
Coiba Island
Gulf of Darien
Aruba
Oranjestad
Netherlands Antilles
Curacao
Bonaire
Willemstad
Point Gallinas
Guajira Peninsula
Gulf of Venezuela
Punto Fijo
Coro
Los Roques
Orchila
Margarita
Tortuga
Riohacha
Maicao
Santa Marta
Cristobal Colon 5775 m
Barranquilla
Soledad
Valledupar
Cartagena
PERIJA MOUNTAINS
Maracaibo
Cabimas
Lake Maracaibo
Puerto Cabello
Caracas
Petare
Valencia
Maracay
Turmero
Barcelona
Cumana
Carupano
Porlamar
Guiria
Puerto la Cruz
Maturin
Barquisimeto
Acarigua
Valera
Trujillo
Sincelejo
Magangue
Mompos
Monteria
Ayapel
Turbo
La Palma
Merida
MERIDA MOUNTAINS
Bolivar Peak 5007 m
Barinas
Guanare
Calabozo
San Fernando de Apure
Zaraza
Valle de la Pascua
El Tigre
Tucupita
San Jose de Amacuro
Santo Tome de Guayana
Ciudad Bolivar
Guasipati
El Callao
Caicara
La Paragua
GUYANA
GUIANA HIGHLANDS
Angel Falls
Roraima 2810 m
Cucuta
Ocana
San Cristobal
COLOMBIA
Bucaramanga
Floridablanca
Barrancabermeja
Arauca
Puerto Berrio
Socorro
Bello
Medellin
Tunja
Sogamoso
VENEZUELA
Meta River
Puerto Paez
Puerto Ayacucho
Apure River
Orinoco River
Caroni River
Magdalena River
Cauca River
Atrato River
D
80°W
E
70°W
F

# South America: Environments

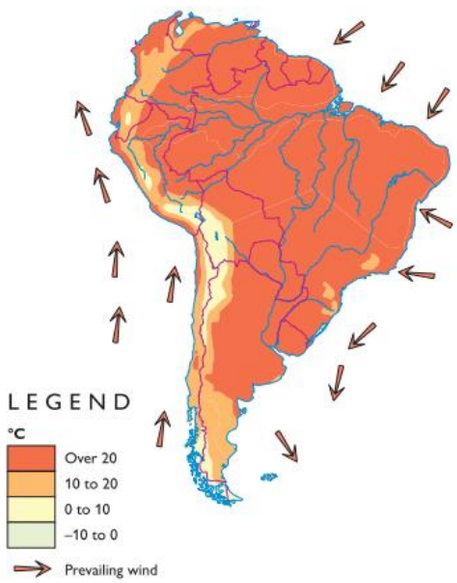
South America extends from north of the Equator almost to the Antarctic Circle. The world's longest mountain range, the Andes Mountains, runs along South America's entire Pacific coast. The mountains greatly influence the climate and vegetation of South America. Dry climates and deserts are found west of the Andes, including the Atacama Desert, the Earth's driest place. To the east of the Andes is the Amazon, the world's largest drainage basin and tropical rainforest. The Amazon rainforest is being cleared at alarming rates for agriculture and mining.

◀ The Andes is the world's longest chain of mountains, stretching 7200 kilometres along the west coast of South America. The world's highest city, La Paz, is located in the Andes. They are also the site of an ancient city of the Incan civilisation – Machu Picchu (pictured). The city was only rediscovered in 1911.

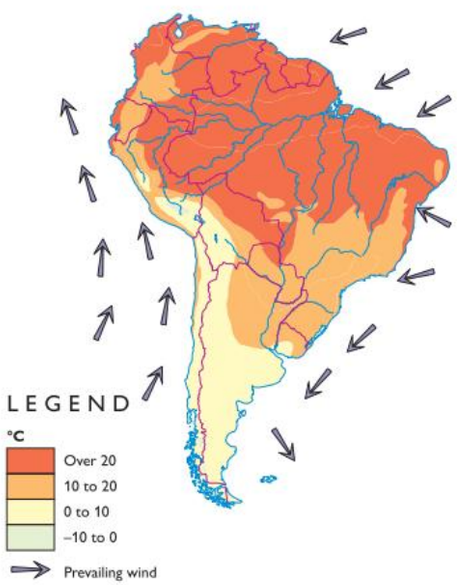
ANNUAL RAINFALL




JANUARY TEMPERATURES

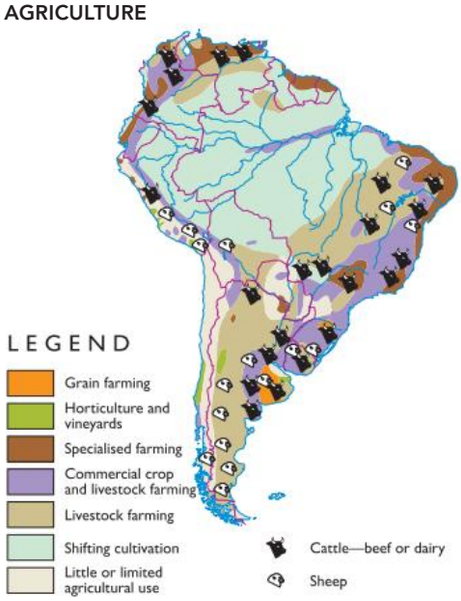



JULY TEMPERATURES




POPULATION


AGRICULTURE




MINERALS

The Andes is the world's longest mountain range, stretching for 7200 kilometres along the west coast of South America.

Suriname is the world's most forested country with 92 per cent forest cover.

The Amazon River is the world's greatest river with an average flow of 175 000 cubic metres per second.

La Paz is the highest capital city in the world at 3630 metres above sea level.

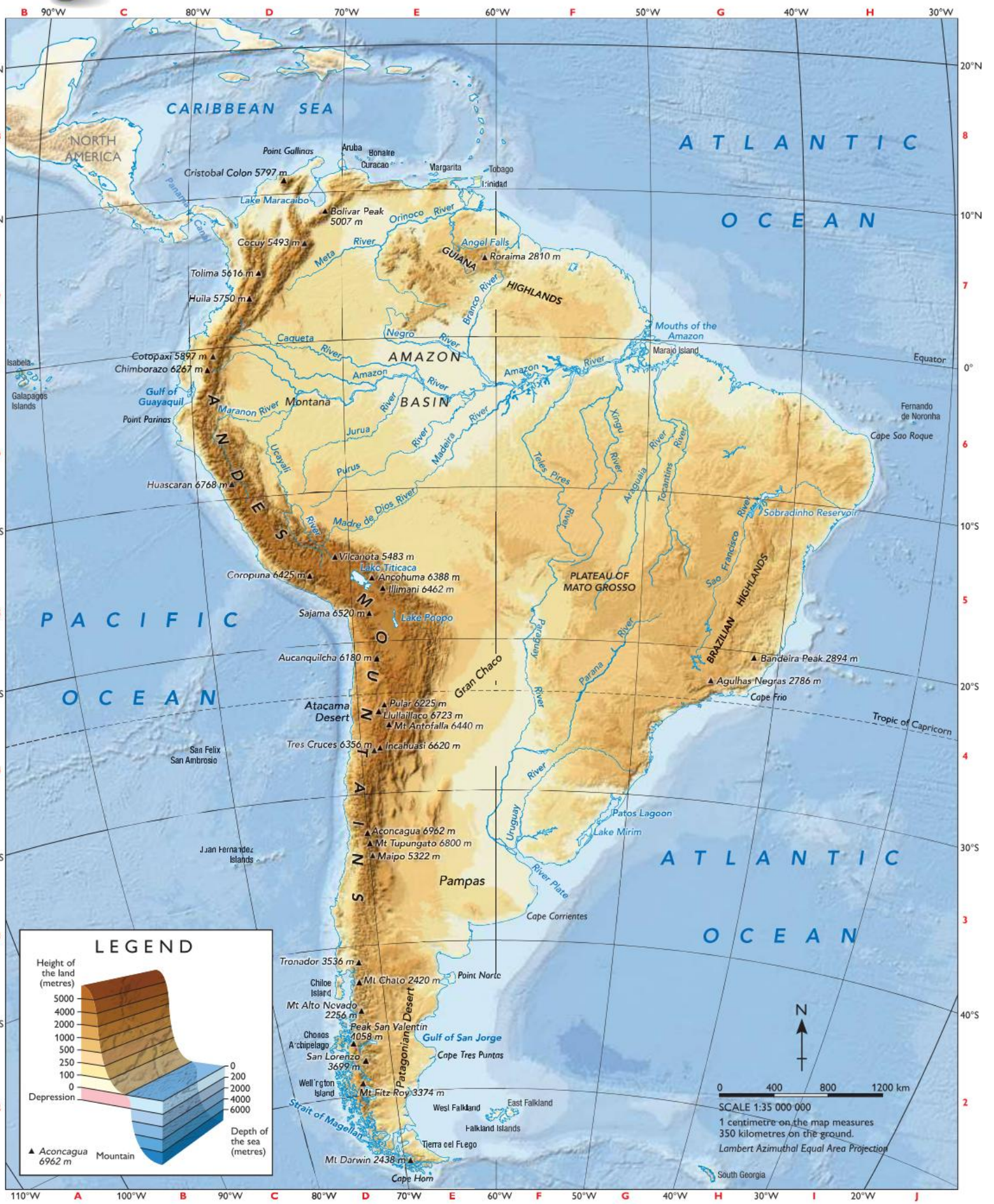
Arica has the world's lowest annual rainfall of just 0.8 millimetres.

At 6440 metres, Mount Antofalla is the world's highest active volcano.




Sao Paulo in Brazil is one of the world's largest cities, with a population of around 20 million people.

# South America: Physical



# South America: Political

# Northern South America

FAST FACTS

## World records

### Longest mountain range

Stretching for 7200 kilometres along the west coast of South America, the Andes Mountains (B3) is the world's longest chain of mountains. The Andes is also the birthplace of the world's greatest river, the Amazon, and the location of Lake Titicaca (C2) – the world's highest navigable lake.

### Greatest river

The Amazon River (C3) and its tributaries carry one-third of the world's fresh water. The Amazon River has the greatest volume of water, carrying more water than the next six rivers combined. The mouth of the Amazon River is 240 kilometres wide and contains Marajo Island, which has an area larger than the country of Switzerland.

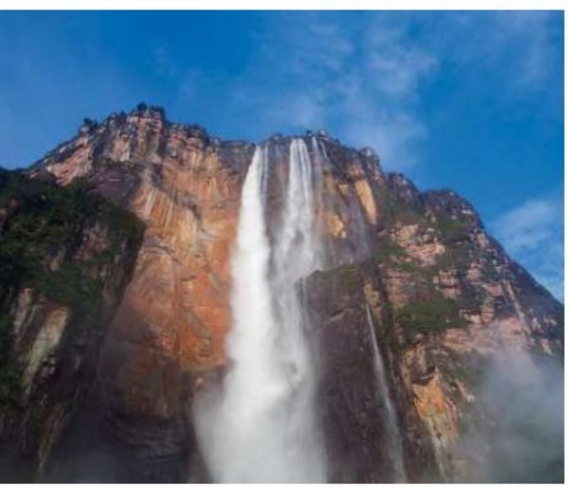
### Largest rainforest

The Amazon rainforest, at 5.5 million square kilometres, is the largest in the world. The area spans nine countries, however, 60 per cent of the rainforest is found in Brazil. Home to over 40 000 known plant species and 2000 types of birds and mammals, much of the region is untouched. More than one-third of all species in the world live in the Amazon rainforest.

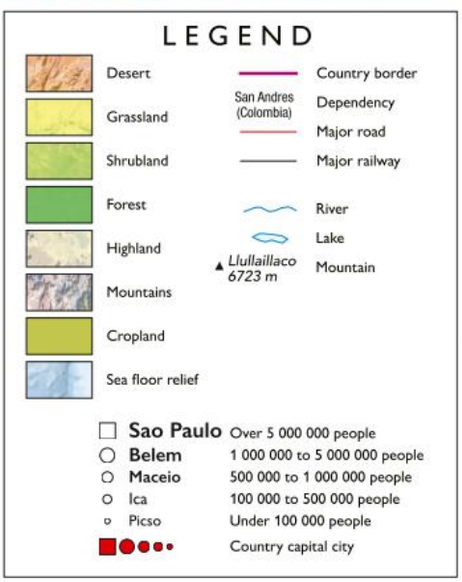
### Highest waterfall

Plunging 979 metres from the edge of a large mesa, Angel Falls (C4) in Venezuela is the world's highest waterfall.

▲ The Amazon River meanders through the Amazon rainforest.



▲ Angel Falls plunges from a mesa.





70°W
C
60°W
D
50°W
E
40°W
F
5
4
3
2
1
10°N
0°
10°S
20°S
Equator
Tropic of Capricorn
Martinique (France)
Fort-de-France
ST LUCIA
Castries
ST VINCENT
Kingstown
BARBADOS
Bridgetown
St George's
GRENADA
Curaçao
Willemstad
Orchila
Coro
Puerto Cabello
Tortuga
Margarita
Porlamar
Scarborough
Tobago
Port of Spain
Trinidad
TRINIDAD and TOBAGO
Valencia
Caracas
Maracay
Cumana
Barcelona
Barquisimeto
Maturin
Valle de la Pascua
Zaraza
Calabozo
El Tigre
Tucupita
San Jose de Amacuro
San Fernando de Apure
Ciudad Guayana
Ciudad Bolivar
Guasipati
River
Caicara
Plains
Orinoco
El Callao
La Paragua
VENEZUELA
GUIANA
GUYANA
Georgetown
New Amsterdam
Linden
Rockstone
Paramaribo
Puerto Paez
Angel Falls
Puerto Ayacucho
Roraima 2810 m
HIGHLANDS
Kwakoegron
Sinnamary
Devil's Island
Cayenne
French Guiana
Regina
Saul
Cape Orange
PACARAIMA MOUNTAINS
Inirida
San Fernando de Atabapo
SURINAME
Boa Vista
Essequibo
Maroa
Cunani
Amapa
Uaupes
Negro
Japurucuara
Barcelos
Branco
Mouths of the Amazon
Macapa
Cape Maguarinho
Marapanim
Marajo Island
Castanhal
Braganca
Ananindeua
Belem
Camiranga
Japura River
Moura
Oriximina
Alenquer
Faro
Santarem
Fonte Boa
Amazon River
Manaus
Codajas
Maues
Altamira
Cameta
Sao Bento
Sao Luis
Tutoia
Camocim
Parnaiba
Caucaia
Fortaleza
Maracanau
Sobral
Barras
Codo
Bacabal
Moncao
Tucurui
Benjamin Constant
Borba
Iriri River
Xingu
Tapajos
Tocantins
Caxias
Campo Maior
Teresina
Timon
Aracati
Russas
Mossoro
Cape Sao Roque
Maraba
Imperatriz
Araguatins
Colinas
Selvas
Manicore
River
Canutama
Labrea
Humaita
Chacorao Falls
Capoeiras Falls
Gradaus
Carolina
Balsas
Parnaiba
Picos
Iguatu
Juazeiro do Norte
Crato
Patos
Natal
Joao Pessoa
Campina Grande
Santa Rita
Limoeiro
Caruaru
Olinda
Recife
Pesqueira
Garanhuns
Porto de Pedras
Purus
Boca do Acre
Madeira
Porto Velho
Aripuana
Juruena
Teles Pires River
Araguacema
Pedro Afonso
Araguaia River
Tocantins River
Palmas
Remanso
Petrolina
Juazeiro
Paulo Afonso Falls
Arapiraca
Maceio
Jeremoabo
Coruripe
Rio Branco
Cobija
Riberalta
Beni
Mamore
Guapore River
Tucano
Aracaju
Barra
Xique-Xique
Jacobina
Sao Francisco River
BRAZIL
Barreiras
Feira de Santana
Alagoinhas
Santo Amaro
Camacari
Salvador
Valenca
San Ramon
Magdalena
Sorata
Apolo
Trinidad
Jequie
Guanambi
Ipiau
Itabuna
Ilheus
Vitoria da Conquista
Monte Azul
Pedra Azul
Lake Titicaca
Puno
Ancohuma 6388 m
La Paz
Illimani 6262 m
BOLIVIA
San Javier
Caceres
Cuiaba
PLATEAU OF MATO GROSSO
Rondonopolis
Anapolis
Brasilia
Luziania
Goiania
Januaria
Sao Francisco
BRAZILIAN HIGHLANDS
Montes Claros
Pirapora
Corocoro
Cochabamba
Tarata
Santa Cruz
Oruro
Sajama 6520 m
ANDES
Lake Poopo
Sucre
Potosi
Mineiros
Rio Verde
Coxim
Morrinhos
Paranaiba
Catalao
Araguari
Uberlandia
Patos
Diamantina
Teofilo Otoni
Governador Valadares
Corumba
Porto Esperanca
Mayor Pablo Lagerenza
Camiri
Uyuni
Pisagua
Iquique
Atacama Desert
Tocopilla
Ollague
Aucanquilcha 6180 m
Tupiza
Tarija
Aquidauana
Campo Grande
Uberaba
Grande River
Barretos
Sete Lagoas
Ipatinga
Belo Horizonte
Caratinga
Colatina
Fort Olimpo
Nioaque
Sao Jose do Rio Preto
Aracatuba
Franca
Ouro Preto
Bandeira Peak 2894 m
Vitoria
Cachoeiro de Itapemirim
Porto Murtinho
Dourados
Ribeirao Preto
Araraquara
Sao Carlos
Juiz de Fora
Barbacena
Chuquicamata
La Quiaca
Maria Elena
Calama
Mariscal Estigarribia
Gran Chaco
PARAGUAY
Puerto Pinasco
Pedro Juan Caballero
Presidente Prudente
Tupa
Marilia
Lins
Bauru
Limeira
Piracicaba
Campos
Aguilhas Negras 2786 m
Pilcomayo
Paraguay River
Parana
CHILE
Antofagasta
Jujuy
Pulat 6225 m
Llullaillaco 6723 m
Salta
Concepcion
Maringa
Londrina
Campinas
Sorocaba
Nova Iguacu
Taubate
Rio de Janeiro
Sao Paulo
Santo Andre
Santos
Bermejo
River
Asuncion
Paraguari
Palotina
Itaipu Reservoir
Ibaiti
Ivaipora
Jaguariaiva
Ciudad del Este
ARGENTINA
Taltal
Rosario de la Frontera
Formosa
Villarrica
Caazapa
Guarapuava
Foz do Iguacu
Ponta Grossa
Curitiba
ATLANTIC OCEAN

# Southern South America

FAST FACTS

## World records

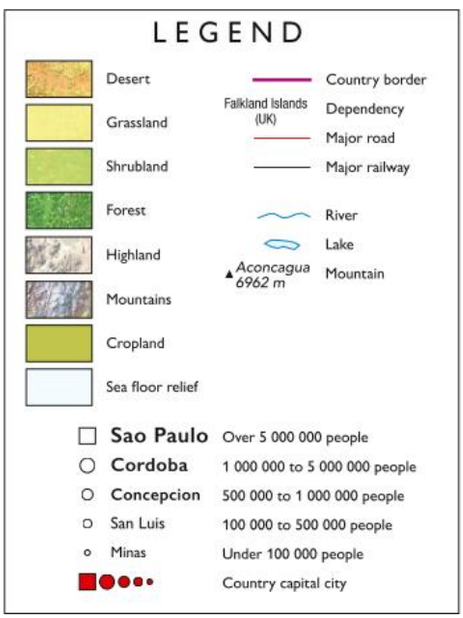
### Driest place

The Atacama Desert (B4) in northern Chile is the driest place on Earth, with some regions not receiving rainfall for more than 400 years. The Andes Mountains stop moisture-bearing winds from the east and the cold Peruvian ocean current cools air from the west, stopping air from rising to produce rain. The cold current also produces fog that drifts onto the coast. Local people use large nylon nets on the slopes of the coastal mountains to collect water from the fog in this dry region of the world.

### Largest copper mine

The Escondida Mine in Chile's Atacama Desert (B4) produces more copper than any other open-pit mine in the world. It produces nine per cent of total copper production and also produces gold and silver.

◀ The Escondida Mine in Chile's Atacama Desert. The satellite image shows the main huge open-pit copper mine in the south of the image. Miners have had to dig deep to retrieve the copper that is located under hundreds of metres of rock. The large tailings dams to the south-east of the main pit contain the leftover rock (tailings). Tailings dams are used to settle this waste and deal with any toxic material it may contain.


PACIFIC OCEAN
ATLANTIC OCEAN
BOLIVIA
PARAGUAY
BRAZIL
CHILE
ARGENTINA
URUGUAY
ANDES MOUNTAINS
Gran Chaco
Pampas
Patagonian Desert
Sucre
Potosi
Camiri
Santa Cruz
Asuncion
Ciudad del Este
Concepcion
Pedro Juan Caballero
Mariscal Estigarribia
Fort Olimpo
Porto Esperanca
Mayor Pablo Lagerenza
Aquidauana
Campo Grande
Nioaque
Porto Murtinho
Dourados
Pinasco
Iquique
Arica
Tacna
Tarija
Oruro
La Quiaca
Uyuni
Chuquicamata
Calama
Tocopilla
Maria Elena
Mejillones
Antofagasta
Aucanquilcha 6180 m
Ollague
Pular 6225 m
Llullaillaco 6723 m
San Antonio de los Cobres
Tropic of Capricorn
Jujuy
Salta
Rosario de la Frontera
Taltal
Chanaral
Tres Cruces 6356 m
Caldera
Copiapo
Potrerillos
Incahuasi 6620 m
Belen
San Miguel de Tucuman
Santiago del Estero
Catamarca
Huasco
Vallenar
Chungungo
La Serena
Coquimbo
Ovalle
La Rioja
Salinas Grandes
Dean Funes
Cordoba
Mar Chiquita Lagoon
Rafaela
Santa Fe
Concordia
Salto
Artigas
La Paz
Uruguaiana
Rivera
Tacuarembo
Bage
Pelotas
Rio Grande
Jaguarao
Lake Mirim
Patos Lagoon
Porto Alegre
Sao Leopoldo
Sao Gabriel
Santana do Livramento
Cachoeira do Sul
Santa Maria
Caxias do Sul
Passo Fundo
Sao Luis Gonzaga
Sao Borja
Santo Angelo
Lages
Florianopolis
Joinvile
Sao Francisco do Sul
Blumenau
Curitiba
Paranagua
Ponta Grossa
Foz do Iguacu
Guarapuava
Chapeco
Posadas
Corrientes
Resistencia
Empedrado
Formosa
Villarrica
Caazapa
Yuty
San Juan Bautista
Pilar
San Ignacio
Encarnacion
Itaipu Reservoir
Palotina
Ivaipora
Ibaiti
Jaguariaiva
Sorocaba
Sao Paulo
Santos
Santo Andre
Rio de Janeiro
Campinas
Piracicaba
Londrina
Maringa
Presidente Prudente
Manilia
Bauru
Araraquara
Sao Carlos
Barbacena
Cachoeiro de Itapemirim
Juiz de Fora
Petropolis
Campos
Nova Iguacu
Araguari
Patos
Uberlandia
Diamantina
Governador Valadares
Sete Lagoas
Uberaba
Belo Horizonte
Franca
Barretos
Sao Jose do Rio Preto
Aracatuba
Tupa
Lins
Ribeirao Preto
Caratinga
Colatina
Ouro Preto
Bandeira Peak 2894 m
Vitoria
Valparaiso
San Antonio
Santiago
Rancagua
Mt Tupungato 6800 m
Maipo 5322 m
Vina del Mar
San Felipe
Mendoza
San Juan
Ilapel
Aconcagua 6962 m
Villa Dolores
Rio Cuarto
San Luis
Mercedes
Rosario
San Nicolas
Pergamino
Zarate
Buenos Aires
La Plata
Chascomus
Las Flores
Dolores
Azul
Olavarria
Tandil
Ayacucho
Balcarce
Mar del Plata
Cape Corrientes
General Alvarado
Necochea
Bahia Blanca
Tres Arroyos
Montevideo
Maldonado
Las Piedras
Minas
Florida
Treinta y Tres
Melo
Paysandu
Concepcion del Uruguay
San Lorenzo
San Pedro
Mercedes
Rivera
Salto
Colorado River
Negro River
Limay River
Neuquen River
Chubut River
Deseado River
Santa Cruz River
Chico River
Coig River
Viedma
Carmen de Patagones
General Roca
Neuquen
Zapala
Lanin
Temuco
Lonquimay
Curacautin
Lonconche
Valdivia
Corral
La Union
Osorno
Tronador 3536 m
Puerto Varas
Puerto Montt
Ancud
Chiloe Island
Castro
Mt Chaiten 2420 m
Barriloche
Lake Nahuel Huapi
Gulf of Corcovado
Mt Aito Nevado 2236 m
Chonos Archipelago
Puerto Aysen
Lake General Carrera
Lake Buenos Aires
Peak San Valentin 4058 m
Gulf of Penas
San Lorenzo 3699 m
Lake Colhue Huapi
Comodoro Rivadavia
Gulf of San Jorge
Cape Tres Puntas
Puerto Deseado
Lake Cardiel
Mt Fitzroy 3374 m
Lake Viedma
Patagonia Glacier
Lake Argentino
Wellington Island
San Julian
Santa Cruz
Bahia Grande
Gallegos
Puerto Natales
Punta Arenas
Strait of Magellan
Tierra del Fuego
Cape San Diego
Ushuaia
Mt Darwin 2438 m
Puerto Toro
Cape Horn
Drake Passage
Gulf of San Matias
Point Norte
Valdes Peninsula
Gulf of Nuevo
Rawson
Trelew
Puerto Madryn
Falkland Islands (UK)
West Falkland
Stanley
East Falkland
Falkland Sound
Grytviken
South Georgia (UK)
South Sandwich Islands (UK)
Zavodovski
Visokoi
0 200 400 600 km
SCALE 1:18 500 000
1 centimetre on the map measures 185 kilometres on the ground.
Azimuthal Equal Area Projection
N
80°W
70°W
60°W
50°W
40°W
30°W
20°S
30°S
40°S
50°S

# Antarctica: Environments

Antarctica is twice the size of Australia. In winter, Antarctica doubles in area as the oceans surrounding the continent freeze. (The limit of winter sea ice is shown on the map.) It is the highest, coldest, driest and windiest place on Earth. The lowest temperature ever recorded on Earth is –89.2 degrees Celsius at Vostok Station on the Antarctic plateau.

▲ **Ice shelf** Where ice sheets and glaciers spill into the ocean, they form floating ice sheets known as ice shelves. When sections of the ice shelves break off, they form icebergs.

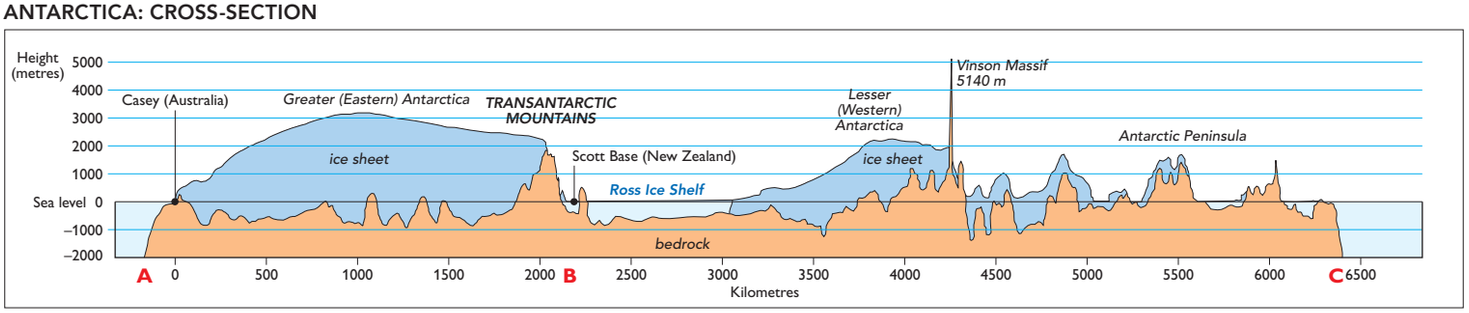

▲ **Sea ice** Sea ice is formed on water and is much thinner than ice shelves.

▲ **Ice sheet** The two-kilometre thick ice sheet over Antarctica pushes much of the underlying rock down below sea level.

▲ **Mountains** Antarctica is the highest continent on Earth, with mountain tops peeking through the ice sheet.

▲ **Scientific bases** Scientific bases, such as this one at the South Pole, are the main human environments established on Antarctica.

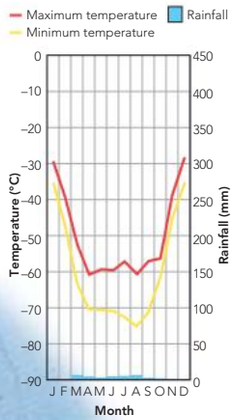
**ANTARCTICA: CROSS-SECTION**

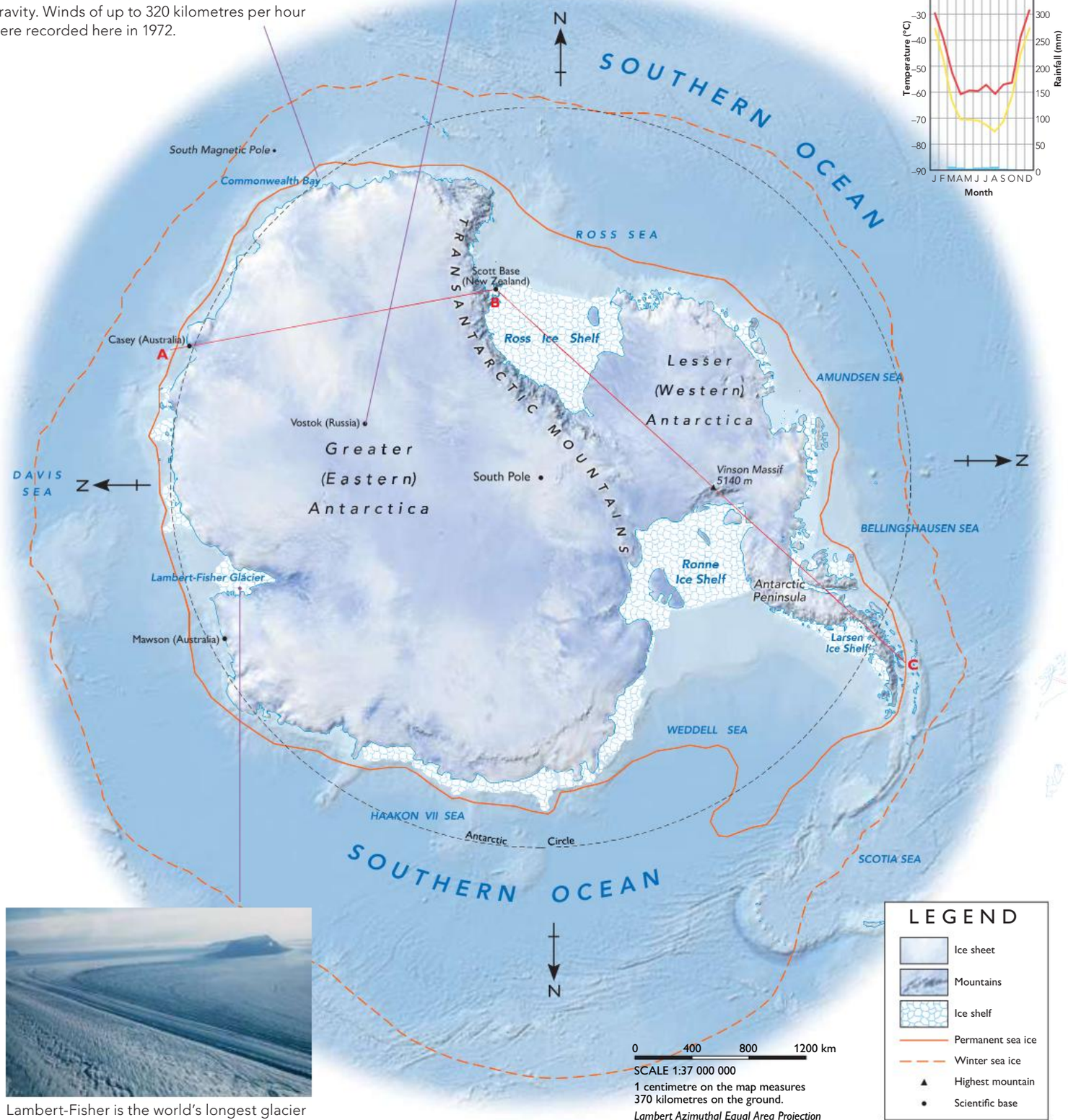


Commonwealth Bay is Earth's windiest place. The dry, freezing katabatic winds flow down from the mountains under the influence of gravity. Winds of up to 320 kilometres per hour were recorded here in 1972.

Vostok is the most remote place on the planet. It is located high on the Antarctic plateau and is the coldest and most inhospitable place in the world. Vostok Station recorded the world's coldest temperature of –89.2 degrees Celsius.

**VOSTOK: CLIMATE GRAPH**

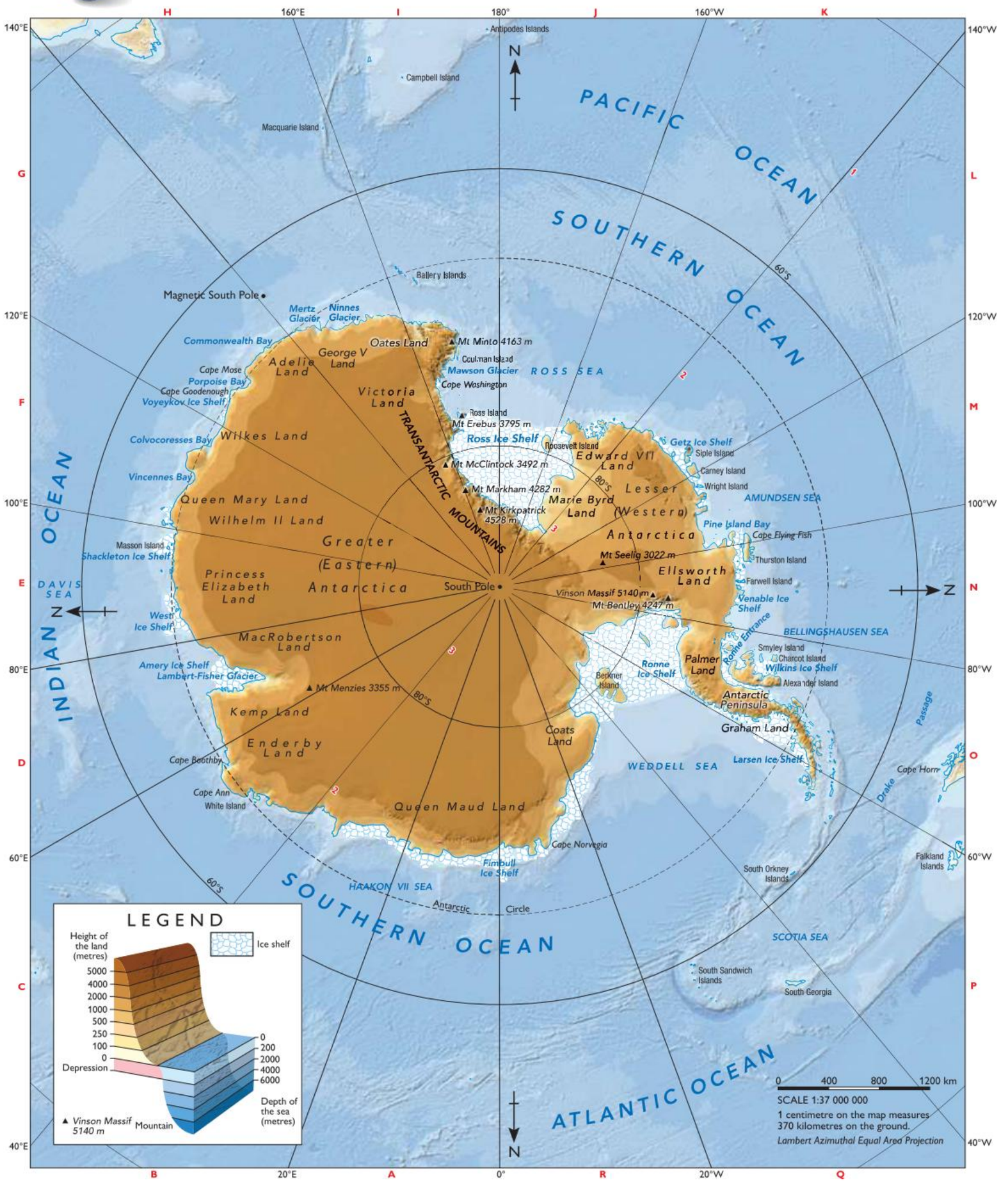


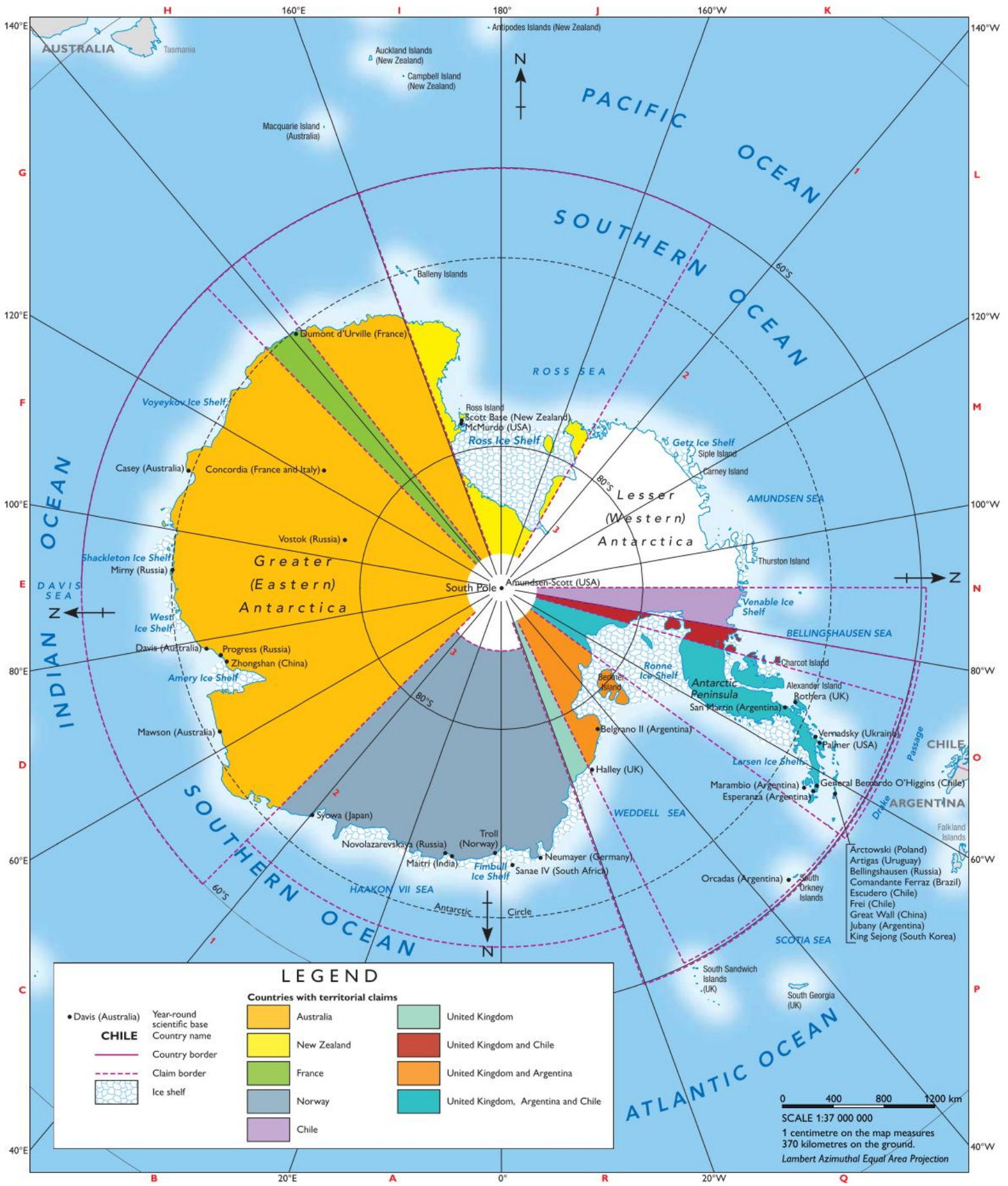



Lambert-Fisher is the world's longest glacier at 400 kilometres long and 40 kilometres wide. Icebergs up to 20 times the size of Uluru carve off the glacier into the Davis Sea.

# Antarctica: Physical

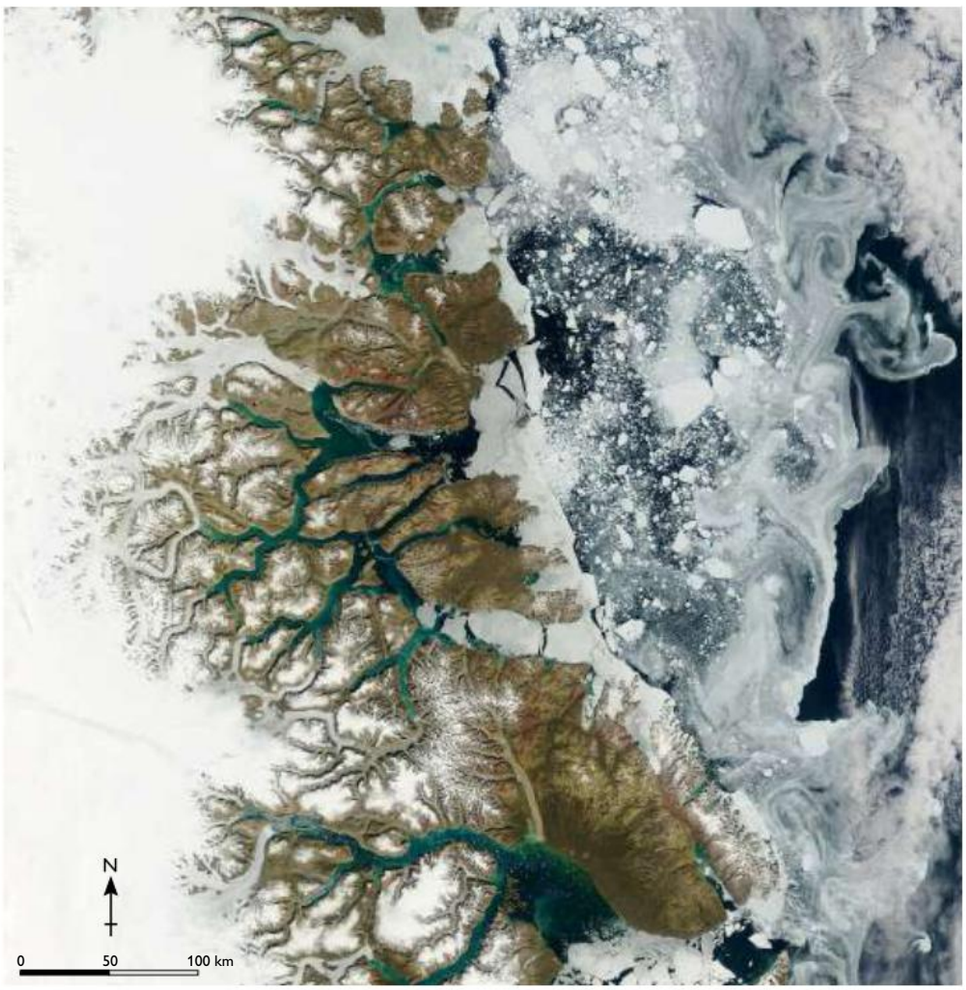


# Antarctica: Political

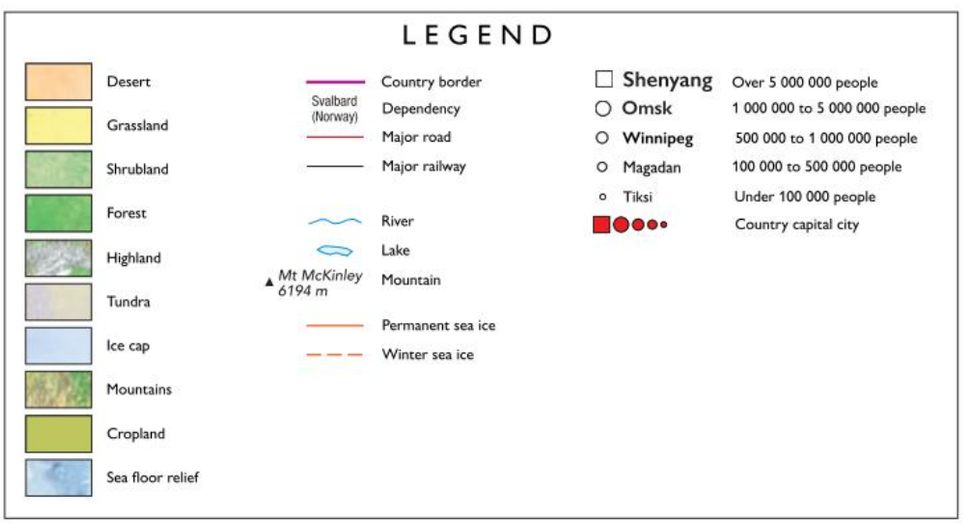


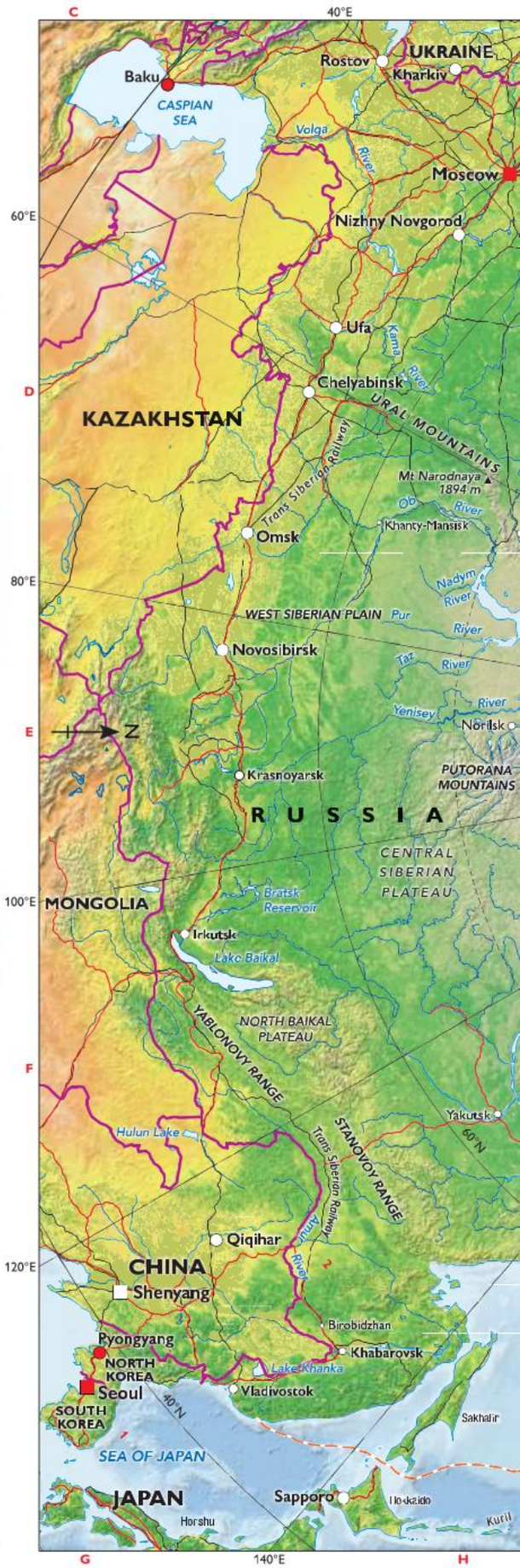
# Arctic

At 2.1 million square kilometres, Greenland is by far the world's largest island. Eighty-one per cent of Greenland is covered by ice. The Greenland ice sheet is second only in size to the Antarctic ice sheet. It has an average thickness of 2.3 kilometres and contains about eight per cent of the world's fresh water. Each summer the fringes of the ice sheet melt (see below) but both locals and scientists have noticed that the ice melt is beginning earlier each year and that more of the ice sheet is melting. Scientists have estimated that if the ice sheet were to melt completely, global sea levels would rise by about eight metres.




▲ Summer thaw on the eastern fringe of Greenland




B
20°E
A
0°
R
20°W
Q
40°W
P
Kyiv
BELARUS
Minsk
Copenhagen
DENMARK
BALTIC SEA
NORTH SEA
Glasgow
UNITED KINGDOM
Riga
Stockholm
Oslo
Shetland Islands
ATLANTIC OCEAN
Lake Peipus
NORWAY
Faroe Islands
Helsinki
St Petersburg
SWEDEN
Lake Ladoga
FINLAND
Hekla 1491 m
Reykjavik
ICELAND
Lake Onega
Horn Cape
Nunap Isua
Strait of Belle Isle
Newfoundland
St John's
WHITE SEA
NORWEGIAN SEA
Denmark Strait
Anticosti Island
Halifax
Arkhangelsk
Jan Mayen (Norway)
Goose Bay-Happy Valley
Natashquan
Murmansk
LABRADOR SEA
North Cape
Nuuk
Kanin Peninsula
Eskimonäs
Smallwood Reservoir
Kolguyev
BARENTS SEA
Svalbard (Norway)
Winter sea ice
Strait
Cape Chidley
Resolution Island
Lake Mistassini
Montreal
Kalaallit Nunaat (Greenland) (Denmark)
Qeqertarsuaq
Davis
Ottawa
Vorkuta
Novaya Zemlya
Iqaluit
Ungava Peninsula
KARA SEA
Permanent sea ice
80°N
Baffin Bay
Baffin Island
Belcher Islands
Yamal Peninsula
Franz Josef Land
Lake Huron
White Island
Cape Zhelaniya
Qaanaaq
Bylot Island
Pond Inlet
Hudson Bay
Lake Superior
Ellesmere Island
Melville Peninsula
Parry Islands
Severnaya Zemlya
Axel Heiberg
Devon Island
Lake Nipigon
NORTH SIBERIAN LOWLANDS
BYRRANGA MOUNTAINS
North Pole
Queen Elizabeth Islands
Coppermine River
Khatanga River
Magnetic North Pole
Sverdrup Islands
Mackenzie King Island
Winnipeg
ARCTIC
80°N
Melville Island
Lake Winnipeg
Victoria Island
Prince Patrick Island
LAPTEV SEA
CANADA
Banks Island
100°W
Olenek River
Delta of the Lena
Kugluktuk
Regina
BEAUFORT SEA
Lake Athabasca
Tiksi
New Siberian Islands
Yellowknife
Great Slave Lake
Great Bear Lake
Lena River
Lyakhov Islands
Mackenzie River
Edmonton
Calgary
Permanent sea ice
EAST SIBERIAN SEA
Barrow
MACKENZIE MOUNTAINS
ROCKY MOUNTAINS
UNITED STATES OF AMERICA
Arctic Circle
VERKHOYANSK RANGE
CHERSKI RANGE
Wrangel Island
CHUKCHI SEA
Colville River
BROOKS RANGE
Dawson City
Pevek
Fairbanks
Whitehorse
Vancouver
Seattle
Kolyma River
CHUKOT RANGE
Alaska (USA)
Juneau
Bering Strait
Chukot Peninsula
ALASKA RANGE
Mt McKinley 6194 m
Prince Rupert
Nome
Valdez
Alexander Archipelago
Vancouver Island
KOLYMA RANGE
Anchorage
Gulf of Alaska
120°W
Magadan
Gulf of Anadyr
Queen Charlotte Islands (Haida Gwaii)
KORYAK RANGE
Gulf of Shelikhov
San Francisco
SEA OF OKHOTSK
Palana
Kodiak Island
PACIFIC OCEAN
SREDINNYY RANGE
International Date Line
Winter sea ice
Alaska Peninsula
Petropavlovsk-Kamchatski
BERING SEA
Kamchatka Peninsula
Aleutian Islands
Islands
160°E
I
180°
J
160°W
K
140°W
L
60°W
O
80°W
N
100°W
M
120°W
0 400 800 1200 km
SCALE 1:32 000 000
1 centimetre on the map measures 320 kilometres on the ground.
Lambert Azimuthal Equal Area Projection

# World statistics

| Country | Capital city | Population | Area (sq km) | Male life expectancy (years) | Female life expectancy (years) | Birth rate (per 1000 people) | Death rate (per 1000 people) | Fertility rate (births per woman) | Population under 15 (%) | Population over 65 (%) | Population growth rate (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | POPULATION | | | | | | | | | |
| **AUSTRALIA AND THE PACIFIC** | | | | | | | | | | | |
| Australia | Canberra | 23 470 145 | 7 741 220 | 79.9 | 85 | 12 | 7.3 | 1.77 | 17.75 | 16.44 | 1.01 |
| Cook Islands | Avarua | 9038 | 236 | 73.4 | 79.2 | 13.7 | 8.6 | 2.16 | 20.68 | 12.55 | -2.72 |
| Fiji | Suva | 926 276 | 18 274 | 70.6 | 76 | 18.2 | 6.2 | 2.37 | 27.45 | 6.8 | 0.56 |
| Kiribati | South Tarawa | 109 367 | 811 | 64.3 | 69.5 | 21 | 7 | 2.34 | 29.27 | 4.34 | 1.12 |
| Marshall Islands | Majuro | 75 684 | 181 | 71.4 | 76 | 23.8 | 4.2 | 2.98 | 34.26 | 4.24 | 1.5 |
| Micronesia, Federated States of | Palikir | 103 643 | 702 | 71.3 | 75.6 | 19.6 | 4.2 | 2.37 | 29.81 | 4.15 | -0.55 |
| Nauru | Yaren | 9692 | 21 | 63.6 | 71.2 | 23.2 | 5.9 | 2.76 | 31.18 | 2.86 | 0.51 |
| New Zealand | Wellington | 4 545 627 | 268 838 | 79.2 | 83.6 | 13.1 | 7.6 | 2.01 | 19.62 | 15.57 | 0.77 |
| Niue | Alofi | 1618 | 260 | — | — | — | — | — | — | — | -0.03 |
| Northern Marianas | Saipan | 51 994 | 464 | 73.6 | 78.1 | 14.9 | 4.9 | 2.76 | 26.17 | 5.98 | -0.52 |
| Palau | Melekeok | 21 516 | 459 | 70.4 | 77 | 11.3 | 8.2 | 1.7 | 18.37 | 8.5 | 0.4 |
| Papua New Guinea | Port Moresby | 7 027 332 | 462 840 | 63.56 | 68.06 | 27.57 | 6.67 | 3.62 | 37.3 | 3.5 | 2.09 |
| Samoa | Apia | 201 316 | 2831 | 71.3 | 77.3 | 20.2 | 5.4 | 2.64 | 30.67 | 5.85 | 0.61 |
| Solomon Islands | Honiara | 660 121 | 28 896 | 71.14 | 76.37 | 24.5 | 3.8 | 3.09 | 34.05 | 4.34 | 1.9 |
| Tonga | Nuku'alofa | 106 398 | 747 | 75 | 78.3 | 21.8 | 4.9 | 3.03 | 33.26 | 6.56 | -0.1 |
| Tuvalu | Funafuti | 11 147 | 26 | 65 | 69.5 | 23.7 | 8.4 | 2.93 | 29.32 | 6.28 | 0.86 |
| Vanuatu | Port Vila | 288 037 | 12 189 | 72.4 | 75.7 | 23.5 | 4 | 2.97 | 34.89 | 4.12 | 1.81 |
| **ASIA** | | | | | | | | | | | |
| Afghanistan | Kabul | 34 940 837 | 652 230 | 50.6 | 53.6 | 37.5 | 13.2 | 5.02 | 40.92 | 2.61 | 2.37 |
| Armenia | Yerevan | 3 038 217 | 29 743 | 71.8 | 78.7 | 12.6 | 9.5 | 1.64 | 18.86 | 11.7 | -0.25 |
| Azerbaijan | Baku | 10 046 516 | 86 600 | 70 | 76.4 | 15.3 | 7 | 1.89 | 23.05 | 6.81 | 0.83 |
| Bahrain | Manama | 1 442 659 | 760 | 76.9 | 81.5 | 13.1 | 2.8 | 1.73 | 18.88 | 3.08 | 2.19 |
| Bangladesh | Dhaka | 159 453 001 | 148 460 | 71.5 | 75.9 | 18.6 | 5.4 | 2.15 | 27.29 | 6.42 | 1.02 |
| Bhutan | Thimphu | 766 397 | 38 394 | 70.1 | 72.2 | 17 | 6.4 | 1.87 | 25.35 | 6.39 | 1.05 |
| Brunei | Bandar Seri Begawan | 450 565 | 5765 | 75.2 | 80 | 16.9 | 3.7 | 1.77 | 22.82 | 5.17 | 1.55 |
| Cambodia | Phnom Penh | 16 449 519 | 181 035 | 62.7 | 67.9 | 22.5 | 7.4 | 2.47 | 30.76 | 4.37 | 1.48 |
| China | Beijing | 1 384 688 986 | 9 596 960 | 73.7 | 78.1 | 12.1 | 8 | 1.6 | 17.22 | 11.27 | 0.37 |
| Cyprus | Nicosia | 1 237 088 | 9251 | 76.2 | 81.9 | 11.2 | 6.8 | 1.47 | 15.64 | 12.38 | 1.27 |
| East Timor | Dili | 1 321 929 | 14 874 | 67.1 | 70.4 | 32.9 | 5.8 | 4.32 | 40.44 | 3.95 | 2.32 |
| Georgia | Tbilisi | 4 003 000 | 69 700 | 72.5 | 80.9 | 12.1 | 10.9 | 1.76 | 18.23 | 16.27 | 0.01 |
| India | New Delhi | 1 296 834 042 | 3 287 263 | 67.8 | 70.5 | 18.7 | 7.3 | 2.4 | 26.98 | 6.39 | 1.14 |
| Indonesia | Jakarta | 262 787 403 | 1 904 569 | 70.6 | 76 | 15.9 | 6.5 | 2.08 | 24.63 | 7.26 | 0.83 |
| Iran | Tehran | 83 024 745 | 1 648 195 | 72.8 | 75.6 | 17.4 | 5.3 | 1.96 | 24.23 | 5.48 | 1.19 |
| Iraq | Baghdad | 40 194 216 | 438 317 | 72.6 | 77.2 | 30 | 3.8 | 3.94 | 39.01 | 3.55 | 2.5 |
| Israel | Jerusalem | 8 424 904 | 21 937 | 80.8 | 84.7 | 17.9 | 5.2 | 2.63 | 27.26 | 11.55 | 1.49 |
| Japan | Tokyo | 126 168 156 | 377 915 | 82.2 | 89 | 7.5 | 9.9 | 1.42 | 12.71 | 28.38 | -0.24 |
| Jordan | Amman | 10 458 413 | 89 342 | 73.6 | 76.6 | 23.6 | 3.4 | 3.14 | 34.14 | 3.51 | 2.02 |
| Kazakhstan | Astana | 18 744 548 | 2 724 900 | 66.2 | 76.3 | 17.5 | 8.2 | 2.22 | 26.09 | 7.9 | 0.98 |
| Kuwait | Kuwait | 2 916 467 | 17 818 | 76.9 | 79.8 | 18.8 | 2.3 | 2.35 | 24.81 | 2.66 | 1.38 |

| Male literacy rate (% of people who can read and write) | Female literacy rate (% of people who can read and write) | Average years of schooling | Doctors per 1000 people | Access to clean water (% of population) | Infant mortality (deaths per 1000 live births) | Contraception rate (% of population) | GDP per capita (US$) | Labour force in agriculture (% of labour force) | Poverty (% of population below the poverty line) | Military expenditure (% of GDP) | Aid received (% of GDP) | $CO_2$ emissions (metric tonnes) | Threatened species | Total energy consumption per capita (kg of oil equivalent) | Country |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATION | | | HEALTH | | | | ECONOMY | | | | | ENVIRONMENT | | | |
| 99 | 99 | 23 | 3.59 | 100 | 4.2 | 66.9 | 50 400 | 3.6 | — | 1.89 | 0 | 439.1 million | 804 | 5897.5 | Australia |
| — | — | 15 | 1.42 | 99.9 | 12.6 | 63.2 | 16 700 | 29 | — | — | 0 | 88 810 | 28 | — | Cook Islands |
| 95.5 | 91.9 | 13 | 0.84 | 95.7 | 9.3 | — | 9800 | 44.2 | 31 | 0.98 | 1.9 | 2.369 million | 190 | — | Fiji |
| — | — | 12 | 0.2 | 66.9 | 31.1 | 22.3 | 2000 | 15 | — | — | 0 | 58 850 | 90 | — | Kiribati |
| 98.3 | 98.2 | 13 | 0.46 | 94.6 | 18.7 | — | 3600 | 11 | — | — | 0 | 293 700 | 84 | — | Marshall Islands |
| 91 | 88 | — | 0.19 | 89 | 19.1 | — | 3400 | 0.9 | 26.7 | — | 0 | 105 | 145 | — | Micronesia, Federated States of |
| — | — | 9 | 1.24 | 96.5 | 7.7 | — | 12 300 | — | — | — | 0 | 76 540 | 74 | — | Nauru |
| 99 | 99 | 19 | 3.03 | 100 | 4.4 | 74.1 | 39 000 | 6.6 | — | 1.1 | 0 | 37.75 million | 150 | 4218 | New Zealand |
| — | — | 12 | — | 98.5 | — | — | 5800 | — | — | — | 0 | 7.252 million | 41 | — | Niue |
| 97 | 96 | — | 0.36 | 97.5 | 12.3 | — | 24 500 | 1.9 | — | — | 0 | — | 84 | — | Northern Marianas |
| 96.8 | 86 | 17 | 1.19 | 95.3 | 10.3 | — | 14 700 | 1.2 | 24.9 | — | 0 | — | 126 | — | Palau |
| 63.4 | 50.9 | — | 5 | 39 | 45.9 | 25.9 | 2300 | 85 | 37 | 1.4 | 7.2 | 6.082 million | 447 | — | Papua New Guinea |
| 99.1 | 98.8 | 12 | 0.34 | 99 | 18 | 26.9 | 5700 | 65 | — | — | 0 | 341 100 | 76 | — | Samoa |
| 88.9 | 79.2 | 8 | 0.2 | 80.8 | 14.3 | 29.3 | 2200 | 75 | — | — | 24.9 | 233 500 | 218 | — | Solomon Islands |
| 99.3 | 99.4 | 13 | 0.52 | 99.6 | 10.9 | 34.1 | 5900 | 31.8 | 22.5 | — | 0 | 139 700 | 57 | — | Tonga |
| — | — | 11 | 0.92 | — | 28.2 | — | 3800 | — | 26.3 | — | 0 | — | 84 | — | Tuvalu |
| 86.6 | 83.8 | 10 | 0.17 | 94.5 | 13.9 | 49 | 2700 | 65 | — | — | 21.6 | 164 800 | 120 | — | Vanuatu |
| 52 | 24.2 | 10 | 0.28 | 55.3 | 108.5 | 22.5 | 2000 | 44.3 | 54.5 | 0.92 | 0 | 9.067 million | 32 | — | Afghanistan |
| 99.7 | 99.6 | 13 | 2.9 | 100 | 12.3 | 57.1 | 9500 | 36.6 | 32 | 4.2 | 11.3 | 5.501 million | 36 | 848 | Armenia |
| 99.9 | 99.7 | 13 | 3.45 | 87 | 23 | 54.9 | 17 500 | 37 | 4.9 | 3.64 | 2.6 | 35.6 million | 45 | 1649 | Azerbaijan |
| 96.9 | 93.5 | 15 | 0.93 | 100 | 8.8 | 61.8 | 49 000 | 1 | — | 4.59 | 0.6 | 37.98 million | 32 | — | Bahrain |
| 75.7 | 70.1 | 11 | 0.53 | 86.9 | 30.5 | 62.3 | 4200 | 42.7 | 24.3 | 1.44 | 2.5 | 79.97 million | 111 | 171 | Bangladesh |
| 73.1 | 55 | 12 | 0.37 | 100 | 30.3 | 65.6 | 9000 | 58 | 12 | — | 10.9 | 604 900 | 54 | — | Bhutan |
| 97.5 | 94.5 | 14 | 1.77 | — | 9.3 | — | 78 900 | 4.2 | — | 2.87 | 0 | 10.04 million | 167 | 7062 | Brunei |
| 86.5 | 75 | 11 | 0.17 | 75.5 | 46.1 | 65.3 | 4000 | 48.7 | 16.5 | 2.09 | 12.5 | 10.55 million | 201 | 354 | Cambodia |
| 98.2 | 94.5 | 14 | 1.79 | 95.5 | 11.8 | 84.5 | 16 700 | 27.7 | 3.3 | 2 | 0.2 | 11.67 billion | 840 | 1316 | China |
| 99.5 | 98.7 | 15 | 1.95 | 100 | 7.7 | — | 37 200 | 3.8 | — | 1.78 | 0.6 | 7.72 million | 41 | 3367 | Cyprus |
| 71.5 | 63.4 | 13 | 0.72 | 71.9 | 33.9 | 26.1 | 6000 | 41 | 41.8 | 0.9 | 0 | 533 400 | 15 | — | East Timor |
| 99.8 | 99.7 | 15 | 5.1 | 100 | 14.7 | 53.4 | 10 700 | 55.6 | 9.2 | 2.1 | 5.6 | 9.912 million | 47 | 718 | Georgia |
| 81.3 | 60.6 | 12 | 0.78 | 94.1 | 37.8 | 53.5 | 7200 | 47 | 21.9 | 2.47 | 0.3 | 2.383 million | 688 | 491 | India |
| 97.2 | 93.6 | 13 | 0.38 | 87.4 | 21.9 | 61 | 12 400 | 32 | 10.9 | 0.84 | 1.1 | 540.7 million | 1127 | 814 | Indonesia |
| 90.4 | 80.8 | 15 | 1.14 | 96.2 | 15.5 | 77.4 | 20 100 | 16.3 | 18.7 | 5 | 0.1 | 638.3 million | 100 | 2381 | Iran |
| 85.7 | 73.7 | 10 | 0.82 | 86.6 | 37.5 | 52.8 | 16 700 | 21.6 | 23 | 3.63 | 0 | 117.9 million | 60 | 1067 | Iraq |
| 98.7 | 96.8 | 16 | 3.22 | 100 | 3.4 | 68 | 36 400 | 1.1 | 22 | 5.62 | 0.7 | 73.82 million | 131 | 2816 | Israel |
| 99 | 99 | 15 | 2.41 | 100 | 2 | 39.8 | 42 900 | 2.9 | 16.1 | 0.93 | 0 | 1.268 million | 324 | 4135.3 | Japan |
| 97.7 | 92.9 | 13 | 2.34 | 96.9 | 13.7 | 51.8 | 9200 | 2 | 14.2 | 4.8 | 6.6 | 27.39 million | 88 | 1296 | Jordan |
| 99.8 | 99.8 | 15 | 3.25 | 92.9 | 19 | 54.8 | 26 300 | 18.1 | 2.6 | 0.84 | 1 | 304.6 million | 73 | 3462 | Kazakhstan |
| 96.7 | 94.8 | 14 | 2.58 | 99 | 6.8 | 52 | 65 800 | — | — | 4.83 | 0 | 10.5 million | 40 | 4102 | Kuwait |

# World statistics

| Country | Capital city | Population | Area (sq km) | Male life expectancy (years) | Female life expectancy (years) | Birth rate (per 1000 people) | Death rate (per 1000 people) | Fertility rate (births per woman) | Population under 15 (%) | Population over 65 (%) | Population growth rate (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | POPULATION | | | | | | | | | |
| Kyrgyzstan | Bishkek | 5 849 296 | 199 951 | 67.1 | 75.6 | 21.6 | 6.4 | 2.59 | 30.4 | 5.43 | 1.02 |
| Laos | Vientiane | 7 234 171 | 236 800 | 62.9 | 67.1 | 23.2 | 7.3 | 2.65 | 32.19 | 3.95 | 1.48 |
| Lebanon | Beirut | 6 100 075 | 10 400 | 76.6 | 79.3 | 14.1 | 5.1 | 1.72 | 23.32 | 7.03 | -3.13 |
| Malaysia | Kuala Lumpur | 31 809 660 | 329 847 | 72.6 | 78.4 | 18.8 | 5.2 | 2.48 | 27.48 | 6.35 | 1.34 |
| Maldives | Male | 392 473 | 298 | 73.7 | 78.5 | 16.1 | 4 | 1.72 | 21.62 | 4.53 | -0.06 |
| Mongolia | Ulan Bator | 3 103 428 | 1 564 116 | 66 | 93.4 | 18.2 | 6.3 | 2.04 | 27 | 4.42 | 1.11 |
| Myanmar | Naypyidaw | 55 622 506 | 676 578 | 67 | 70.3 | 17.7 | 7.3 | 2.13 | 26.56 | 5.67 | 0.89 |
| Nepal | Kathmandu | 29 717 587 | 147 181 | 70.6 | 72 | 19.1 | 5.6 | 2.07 | 29.54 | 5.34 | 1.09 |
| North Korea | Pyongyang | 25 381 085 | 120 538 | 67.2 | 75 | 14.6 | 9.3 | 1.94 | 20.65 | 9.5 | 0.52 |
| Oman | Muscat | 4 613 241 | 309 500 | 73.9 | 78 | 23.7 | 3.3 | 2.8 | 30.1 | 3.55 | 2 |
| Pakistan | Islamabad | 207 862 518 | 796 095 | 66.4 | 70.5 | 21.6 | 6.3 | 2.55 | 30.76 | 4.56 | 1.41 |
| Philippines | Manila | 105 893 381 | 300 000 | 66.1 | 73.3 | 23.4 | 6.1 | 2.99 | 33.07 | 4.61 | 1.55 |
| Qatar | Doha | 2 363 569 | 11 586 | 76.9 | 81.2 | 9.5 | 1.6 | 1.89 | 12.7 | 1.06 | 1.95 |
| Saudi Arabia | Riyadh | 33 091 113 | 2 149 690 | 74.2 | 77.3 | 15.6 | 3.3 | 2.04 | 25.74 | 3.32 | 1.63 |
| Singapore | Singapore | 5 995 991 | 719 | 82.8 | 88.3 | 8.7 | 3.5 | 0.84 | 12.77 | 10.03 | 1.79 |
| South Korea | Seoul | 51 418 097 | 99 720 | 79.4 | 85.8 | 8.3 | 6.3 | 1.27 | 13.03 | 14.55 | 0.44 |
| Sri Lanka | Colombo | 22 576 592 | 65 610 | 73.7 | 80.8 | 14.8 | 6.3 | 2.05 | 23.75 | 9.98 | 0.73 |
| Syria | Damascus | 19 454 263 | 187 437 | 72.8 | 77.8 | 20.7 | 4 | 2.44 | 31.39 | 4.31 | 7.37 |
| Taiwan | Taipei | 23 545 963 | 35 980 | 77.2 | 83.7 | 8.2 | 7.6 | 1.13 | 12.68 | 14.36 | 0.15 |
| Tajikistan | Dushanbe | 8 604 882 | 144 100 | 65.2 | 71.7 | 22.8 | 5.9 | 2.59 | 32.05 | 3.41 | 1.58 |
| Thailand | Bangkok | 68 615 858 | 513 120 | 71.9 | 78.5 | 11 | 8.1 | 1.52 | 16.73 | 10.97 | 0.29 |
| Turkey | Ankara | 81 257 239 | 783 562 | 72.9 | 77.7 | 15.4 | 6 | 2 | 24.26 | 7.79 | 0.49 |
| Turkmenistan | Ashgabat | 5 411 012 | 488 100 | 67.6 | 73.9 | 18.9 | 6.1 | 2.06 | 25.66 | 4.93 | 1.1 |
| United Arab Emirates | Abu Dhabi | 9 701 315 | 83 600 | 77.3 | 80.1 | 9.8 | 1.7 | 1.73 | 14.39 | 1.47 | 1.44 |
| Uzbekistan | Tashkent | 30 023 709 | 447 400 | 71.2 | 77.5 | 16.6 | 5.4 | 1.75 | 23.61 | 5.44 | 0.91 |
| Vietnam | Hanoi | 97 040 334 | 331 210 | 71.4 | 76.7 | 15.2 | 5.9 | 1.79 | 23.27 | 6.35 | 0.9 |
| Yemen | San'a | 28 667 230 | 527 968 | 64 | 68.5 | 27.6 | 5.9 | 3.48 | 39.16 | 2.8 | 2.17 |
| **EUROPE** | | | | | | | | | | | |
| Albania | Tirane | 3 057 220 | 28 748 | 76 | 81.6 | 13.2 | 6.9 | 1.52 | 17.84 | 9.8 | 0.3 |
| Andorra | Andorra-la-Vella | 85 708 | 468 | 80.7 | 85.3 | 7.3 | 7.4 | 1.41 | 14.06 | 16.18 | -0.01 |
| Austria | Vienna | 8 793 370 | 83 871 | 79 | 84.5 | 9.5 | 9.7 | 1.48 | 14 | 19.44 | 0.42 |
| Belarus | Minsk | 9 527 543 | 207 600 | 67.8 | 79 | 10 | 13.2 | 1.49 | 15.91 | 15.22 | -0.24 |
| Belgium | Brussels | 11 570 762 | 30 528 | 78.6 | 83.9 | 11.3 | 9.7 | 1.78 | 17.2 | 18.78 | 0.67 |
| Bosnia and Herzegovina | Sarajevo | 3 849 891 | 51 197 | 74.1 | 80.3 | 8.7 | 10.1 | 1.31 | 13.24 | 15.04 | -0.17 |
| Bulgaria | Sofia | 7 057 504 | 110 879 | 71.5 | 78.3 | 8.5 | 14.5 | 1.47 | 14.6 | 19.54 | 0.63 |
| Croatia | Zagreb | 4 270 480 | 56 594 | 73.2 | 79.6 | 8.8 | 12.4 | 1.41 | 14.21 | 19.91 | -0.51 |
| Czech Republic | Prague | 10 686 269 | 78 867 | 76 | 82.1 | 9.2 | 10.5 | 1.46 | 15.21 | 19.42 | 0.1 |
| Denmark | Copenhagen | 5 809 502 | 43 094 | 79.1 | 83.1 | 10.9 | 9.3 | 1.78 | 16.57 | 19.42 | 0.59 |
| Estonia | Tallinn | 1 266 375 | 45 226 | 67.45 | 78.53 | 10.37 | 13.42 | 1.42 | 14.9 | 17.6 | -0.63 |
| Finland | Helsinki | 5 537 364 | 337 030 | 78.1 | 84.2 | 10.7 | 10.1 | 1.75 | 16.44 | 21.51 | 0.33 |

| Male literacy rate (% of people who can read and write) | Female literacy rate (% of people who can read and write) | Average years of schooling | Doctors per 1000 people | Access to clean water (% of population) | Infant mortality (deaths per 1000 live births) | Contraception rate (% of population) | GDP per capita (US$) | Labour force in agriculture (% of labour force) | Poverty (% of population below the poverty line) | Military expenditure (% of GDP) | Aid received (% of GDP) | $CO_2$ emissions (metric tonnes) | Threatened species | Total energy consumption per capita (kg of oil equivalent) | Country |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATION | | | HEALTH | | | | ECONOMY | | | | | ENVIRONMENT | | | |
| 99.6 | 99.4 | 13 | 1.88 | 90 | 25 | 42 | 3700 | 48 | 32.1 | 3.15 | 16.5 | 10.02 million | 39 | 544 | Kyrgyzstan |
| 90 | 79.4 | 11 | 0.5 | 75.7 | 48.4 | 54.1 | 7400 | 73.1 | 22 | 0.2 | 16.4 | 10.42 million | 129 | — | Laos |
| 96 | 91.8 | 11 | 2.27 | 99 | 7.2 | 54.5 | 19 600 | — | 28.6 | 2.91 | 1.2 | 23.36 million | 46 | 1559 | Lebanon |
| 96.2 | 93.2 | 13 | 1.51 | 98.2 | 12.1 | 52.2 | 29 100 | 11 | 3.8 | 1.11 | 0.1 | 226.8 million | 1167 | 2418 | Malaysia |
| 99.8 | 98.8 | 12 | 1.04 | 98.6 | 21.3 | 34.7 | 19 200 | 7.7 | 15 | — | 3.5 | 1.648 million | 59 | — | Maldives |
| 98.2 | 98.6 | 15 | 2.89 | 64.4 | 20.5 | 54.6 | 13 000 | 31.1 | 29.6 | 0.68 | 22.4 | 19.86 million | 35 | 916 | Mongolia |
| 80 | 71.8 | 10 | 0.86 | 80.6 | 34.4 | 52.2 | 6300 | 70 | 25.6 | 4.08 | 0 | 27.01 million | 236 | 291 | Myanmar |
| 76.4 | 53.1 | 12 | 0.65 | 91.6 | 26.9 | 52.6 | 2700 | 69 | 25.2 | 1.55 | 7.1 | 8.386 million | 83 | 338 | Nepal |
| 100 | 100 | 11 | 3.67 | 99.7 | 21.4 | 78.2 | 1700 | 37 | — | — | 0 | 27.83 million | 47 | 943 | North Korea |
| 97.4 | 93.2 | 15 | 1.97 | 93.4 | 12.4 | 29.7 | 46 000 | 4.7 | — | 8.17 | 0 | 68.94 million | 78 | 5440 | Oman |
| 69.5 | 45.8 | 8 | 0.98 | 91.4 | 50.4 | 34.2 | 5400 | 42.3 | 29.5 | 3.5 | 1.1 | 179.5 million | 105 | 490 | Pakistan |
| 95.8 | 96.8 | 13 | 1.28 | 91.8 | 20.9 | 54.1 | 8400 | 25.4 | 21.6 | 1.4 | 0.8 | 117.2 million | 680 | 538 | Philippines |
| 97.4 | 96.8 | 12 | 2.78 | 100 | 6 | 37.5 | 124 100 | — | — | — | 0 | 114.2 million | 31 | — | Qatar |
| 97 | 91.1 | 17 | 2.39 | 97 | 12.1 | 24.6 | 54 500 | 6.7 | — | 8.78 | 0 | 657.1 million | 103 | 6068 | Saudi Arabia |
| 98.7 | 95.4 | 16 | 2.31 | 100 | 2.3 | 62 | 94 100 | 0.7 | — | 3.12 | 0 | 249.5 million | 272 | 6932 | Singapore |
| 99.2 | 96.6 | 17 | 2.37 | 97.8 | 3 | 79.6 | 39 500 | 4.8 | 14.4 | 2.7 | 0 | 778.4 million | 58 | 4415.4 | South Korea |
| 93 | 91 | 14 | 0.96 | 95.6 | 8.2 | 61.7 | 12 900 | 27 | 6.7 | 2.14 | 1.7 | 25.19 million | 546 | 478 | Sri Lanka |
| 91.7 | 81 | 9 | 1.22 | 90.1 | 14.4 | 53.9 | 2900 | 17 | 82.5 | — | 0.9 | 27.51 million | 74 | 940 | Syria |
| 99.7 | 97.3 | — | — | — | 4.3 | — | 50 500 | 4.9 | 1.5 | — | 0 | 248.8 million | 301 | 4621 | Taiwan |
| 99.8 | 99.7 | 11 | 1.7 | 73.8 | 30.8 | 29.3 | 3200 | 43 | 31.5 | 1.19 | 14.4 | 6.329 million | 39 | 531 | Tajikistan |
| 94.7 | 91.2 | 15 | 0.81 | 97.8 | 9 | 78.4 | 17 900 | 31.8 | 7.2 | 1.5 | 0.5 | 355 million | 467 | 1557 | Thailand |
| 98.8 | 93.6 | 18 | 1.76 | 100 | 16.9 | 73.5 | 27 000 | 18.4 | 21.9 | 2.88 | 0.2 | 379.5 million | 146 | 1185.9 | Turkey |
| 99.8 | 99.6 | 11 | 2.22 | 71.1 | 33.1 | 50.2 | 18 200 | 48.2 | 0.2 | — | 0.7 | 100.5 million | 45 | 3381 | Turkmenistan |
| 93.1 | 95.8 | 14 | 2.39 | 99.6 | 5.5 | 27.5 | 68 600 | 7 | 19.5 | 5.70 | 0 | 289.4 million | 46 | — | United Arab Emirates |
| 100 | 100 | 12 | 2.37 | 87.3 | 17.4 | 64.9 | 6900 | 25.9 | 14 | — | 2.4 | 95.58 million | 49 | 1798 | Uzbekistan |
| 96.3 | 92.8 | 10 | 0.82 | 97.6 | 16.7 | 75.7 | 6900 | 40.3 | 8 | 2.19 | 5.4 | 235.3 million | 417 | 617 | Vietnam |
| 85.1 | 55 | 9 | 0.31 | 54.9 | 44.6 | 33.5 | 2500 | — | 54 | 5.04 | 3.1 | 13.68 million | 269 | 321 | Yemen |
| 98.4 | 96.9 | 15 | 1.2 | 83.6 | 11.6 | 46 | 12 500 | 41.4 | 14.3 | 1.25 | 8.5 | 4.5 million | 57 | 767 | Albania |
| 100 | 100 | 11 | 3.33 | 100 | 18.9 | — | 49 900 | 0.5 | — | — | 0 | — | 8 | — | Andorra |
| — | — | 16 | 5.14 | 100 | 3.4 | 65.7 | 50 000 | 0.7 | 3 | 0.58 | 0 | 63.93 million | 73 | 4134.7 | Austria |
| 99.8 | 99.7 | 15 | 4.08 | 99.7 | 3.6 | 72.1 | 18 900 | 9.7 | 5.7 | 0.93 | 0.1 | 56.07 million | 26 | 2720 | Belarus |
| 99 | 99 | 20 | 3.32 | 100 | 3.4 | 66.8 | 46 600 | 1.3 | 15.1 | 0.93 | 0 | 134.7 million | 59 | 5891.7 | Belgium |
| 98.5 | 97.5 | 14 | 1.89 | 99.9 | 5.4 | 45.8 | 12 800 | 18 | 16.9 | 0.99 | 0 | 22.07 million | 48 | 1270 | Bosnia and Herzegovina |
| 98.7 | 98.1 | 15 | 3.99 | 99.4 | 8.3 | 41.5 | 21 800 | 6.8 | 23.4 | 1.56 | 2.6 | 46.31 million | 93 | 2592 | Bulgaria |
| 99.7 | 98.9 | 15 | 3.13 | 99.6 | 9.1 | — | 24 700 | 1.9 | 19.5 | 1.36 | 0.3 | 17.96 million | 34 | 2000 | Croatia |
| 99 | 99 | 17 | 4.31 | 100 | 2.6 | 72 | 35 500 | 2.8 | 9.7 | 1.11 | 0.9 | 115.8 million | 32 | 4418.6 | Czech Republic |
| 99 | 99 | 19 | 4.46 | 100 | 3.2 | 78 | 50 100 | 2.4 | 13.4 | 1.21 | 0 | 37.45 million | 11 | 3634.3 | Denmark |
| 99.8 | 99.8 | 16 | 333 | 100 | 7.32 | 70.3 | 18 800 | 2.8 | 19.5 | 2 | 1.3 | 5.306 million | 13 | 3786 | Estonia |
| 100 | 100 | 19 | 3.81 | 100 | 2.5 | 85.5 | 44 500 | 4 | — | 1.29 | 0 | 45.01 million | 18 | 6555 | Finland |

# World statistics

| Country | Capital city | Population | Area (sq km) | Male life expectancy (years) | Female life expectancy (years) | Birth rate (per 1000 people) | Death rate (per 1000 people) | Fertility rate (births per woman) | Population under 15 (%) | Population over 65 (%) | Population growth rate (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | POPULATION | | | | | | | | | |
| France | Paris | 67 364 357 | 643 801 | 78.9 | 85.3 | 12.1 | 9.4 | 2.06 | 18.48 | 19.82 | 0.37 |
| Germany | Berlin | 80 457 737 | 357 022 | 78.6 | 83.4 | 8.6 | 11.8 | 1.46 | 12.83 | 22.36 | -0.17 |
| Greece | Athens | 10 761 523 | 131 957 | 78.2 | 83.6 | 8.3 | 11.4 | 1.44 | 13.72 | 12.14 | -0.07 |
| Hungary | Budapest | 9 825 704 | 93 028 | 72.6 | 80.2 | 8.9 | 12.8 | 1.45 | 14.66 | 19.5 | -0.26 |
| Iceland | Reykjavik | 343 518 | 103 000 | 80.9 | 85.5 | 13.6 | 6.5 | 1.99 | 20.4 | 14.76 | 1.08 |
| Ireland | Dublin | 5 068 050 | 70 273 | 78.7 | 83.5 | 13.8 | 6.6 | 1.96 | 21.37 | 13.32 | 1.11 |
| Italy | Rome | 62 246 674 | 301 340 | 79.7 | 85.2 | 8.5 | 10.5 | 1.45 | 13.6 | 21.69 | 0.16 |
| Kosovo | Pristina | 1 907 592 | 10 887 | — | — | — | — | — | 24.74 | 14.55 | — |
| Latvia | Riga | 1 923 559 | 64 589 | 70.4 | 79.7 | 9.6 | 14.5 | 1.52 | 15.24 | 19.85 | -1.1 |
| Liechtenstein | Vaduz | 38 547 | 160 | 79.8 | 84.8 | 10.4 | 7.6 | 1.69 | 15.23 | 17.91 | 0.78 |
| Lithuania | Vilnius | 2 793 284 | 65 300 | 69.9 | 80.8 | 9.8 | 14.8 | 1.6 | 15.11 | 19.91 | -1.1 |
| Luxembourg | Luxembourg | 605 764 | 2586 | 79.9 | 85 | 11.6 | 7.3 | 1.62 | 16.74 | 15.11 | 1.9 |
| Malta | Valletta | 449 043 | 316 | 80.6 | 84.8 | 10 | 7.9 | 1.48 | 14.29 | 29.51 | 0.99 |
| Moldova | Chisinau | 3 437 720 | 33 851 | 67.4 | 75.4 | 11.2 | 12.6 | 1.57 | 18.29 | 13.08 | -1.06 |
| Monaco | Monaco | 30 727 | 2 | 85.5 | 93.4 | 6.5 | 10.1 | 1.54 | 10.27 | 33.15 | 0.3 |
| Montenegro | Podgorica | 614 249 | 13 812 | — | — | 11.9 | 10.4 | — | 18.22 | 15.09 | -0.34 |
| Netherlands | Amsterdam | 17 151 228 | 41 543 | 79.3 | 83.8 | 10.9 | 9 | 1.78 | 16.28 | 19.1 | 0.38 |
| North Macedonia | Skopje | 2 118 945 | 25 713 | 73.8 | 78.2 | 10.8 | 9.6 | 1.49 | 16.24 | 13.38 | 0.19 |
| Norway | Oslo | 5 372 191 | 324 802 | 79.9 | 84.1 | 12.2 | 8 | 1.85 | 17.99 | 16.94 | 0.94 |
| Poland | Warsaw | 38 420 687 | 312 685 | 74.1 | 82 | 9.3 | 10.5 | 1.36 | 14.8 | 17.47 | -0.16 |
| Portugal | Lisbon | 10 355 493 | 92 090 | 77.7 | 84.2 | 8.2 | 10.6 | 1.39 | 14.01 | 20.26 | -0.27 |
| Romania | Bucharest | 21 457 116 | 238 391 | 72.1 | 79.2 | 8.7 | 12 | 1.36 | 14.31 | 16.76 | -0.35 |
| Russia | Moscow | 142 122 776 | 17 098 242 | 65.6 | 77.3 | 10.7 | 13.4 | 1.61 | 17.21 | 14.66 | -0.11 |
| San Marino | San Marino | 33 779 | 61 | 80.8 | 86.2 | 8.6 | 8.8 | 1.51 | 15.04 | 19.8 | 0.7 |
| Serbia | Belgrade | 7 078 110 | 77 474 | 73 | 79 | 8.9 | 13.6 | 1.44 | 14.35 | 18.98 | -0.47 |
| Slovakia | Bratislava | 5 445 040 | 49 035 | 73.9 | 81.2 | 9.6 | 9.9 | 1.42 | 15.2 | 15.97 | -0.02 |
| Slovenia | Ljubljana | 2 102 126 | 20 273 | 78.3 | 84.2 | 9.2 | 9.9 | 1.58 | 14.8 | 20.14 | 0.03 |
| Spain | Madrid | 49 331 076 | 505 370 | 78.8 | 85 | 9 | 9.2 | 1.5 | 15.29 | 18.15 | 0.73 |
| Sweden | Stockholm | 10 040 995 | 450 295 | 80.3 | 84.3 | 12.1 | 9.4 | 1.87 | 17.54 | 20.37 | 0.8 |
| Switzerland | Bern | 8 292 809 | 41 277 | 80.4 | 85.2 | 10.5 | 8.4 | 1.56 | 15.23 | 18.34 | 0.68 |
| Ukraine | Kyiv | 43 952 299 | 603 550 | 67.7 | 77.4 | 10.1 | 14.3 | 1.55 | 15.95 | 16.49 | 0.04 |
| United Kingdom | London | 65 105 246 | 243 610 | 78.7 | 83.2 | 12 | 9.4 | 1.88 | 17.59 | 18.19 | 0.51 |
| **AFRICA** | | | | | | | | | | | |
| Algeria | Algiers | 41 657 488 | 2 381 740 | 75.8 | 78.7 | 21.5 | 4.3 | 2.66 | 29.49 | 5.81 | 1.63 |
| Angola | Luanda | 30 355 880 | 1 246 700 | 58.5 | 62.7 | 43.7 | 9 | 6.09 | 48.07 | 2.32 | 3.49 |
| Benin | Porto-Novo | 11 340 504 | 112 622 | 61.2 | 64.2 | 34.5 | 7.7 | 4.67 | 42.62 | 2.89 | 2.68 |
| Botswana | Gaborone | 2 249 104 | 600 370 | 61.8 | 66 | 21.7 | 9.5 | 2.53 | 31.48 | 5.33 | 1.52 |
| Burkina Faso | Ouagadougou | 19 742 715 | 274 200 | 60.1 | 63.6 | 36.9 | 8.7 | 4.77 | 44.28 | 3.16 | 2.76 |
| Burundi | Bujumbura | 11 844 520 | 27 830 | 59.6 | 63.2 | 40.9 | 8.6 | 5.93 | 45.52 | 2.69 | 3.23 |
| Cameroon | Yaounde | 25 640 965 | 475 440 | 58 | 60.9 | 35 | 9.4 | 4.85 | 42.15 | 3.23 | 2.54 |
| Cape Verde | Praia | 568 373 | 4033 | 70.3 | 75.1 | 19.7 | 6 | 2.21 | 28.7 | 2.69 | 1.32 |
| Central African Republic | Bangui | 5 745 062 | 622 984 | 51.9 | 54.7 | 34 | 12.9 | 4.25 | 38.89 | 3.39 | 2.11 |
| Chad | N'Djamena | 15 833 116 | 1 284 000 | 55.7 | 59.3 | 43 | 10.5 | 5.9 | 48.12 | 2.39 | 3.23 |

| Male literacy rate (% of people who can read and write) | Female literacy rate (% of people who can read and write) | Average years of schooling | Doctors per 1000 people | Access to clean water (% of population) | Infant mortality (deaths per 1000 live births) | Contraception rate (% of population) | GDP per capita (US$) | Labour force in agriculture (% of labour force) | Poverty (% of population below the poverty line) | Military expenditure (% of GDP) | Aid received (% of GDP) | $CO_2$ emissions (metric tonnes) | Threatened species | Total energy consumption per capita (kg of oil equivalent) | Country |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATION | | | HEALTH | | | | ECONOMY | | | | | ENVIRONMENT | | | |
| 99 | 99 | 15 | 3.23 | 100 | 3.2 | 78.4 | 44 100 | 2.8 | 14.2 | 1.79 | 0 | 341.2 million | 126 | 4396.8 | France |
| 99 | 99 | 17 | 4.21 | 100 | 3.4 | 80.3 | 50 800 | 1.4 | 16.7 | 1.24 | 0 | 847.6 million | 78 | 4187 | Germany |
| 98.5 | 96.9 | 18 | 4.59 | 100 | 4.5 | 61.3 | 27 800 | 12.6 | 36 | 2.4 | 0 | 69.37 million | 144 | 2794 | Greece |
| 99.1 | 99 | 15 | 3.23 | 100 | 4.8 | 61.6 | 29 600 | 4.9 | 14.9 | 1.05 | 0.6 | 51.28 million | 48 | 2757.4 | Hungary |
| 99 | 99 | 19 | 3.97 | 100 | 2.1 | — | 52 200 | 4.8 | — | 0.1 | 0 | 3.228 million | 17 | — | Iceland |
| 99 | 99 | 19 | 3.09 | 97.9 | 3.6 | 73.3 | 73 200 | 5 | 8.2 | 0.4 | 0 | 36.91 million | 28 | 3656 | Ireland |
| 99.4 | 99 | 16 | 4.09 | 100 | 3.2 | 65.1 | 38 200 | 3.9 | 29.9 | 1.12 | 0 | 351 million | 152 | 3169.1 | Italy |
| 96.6 | 87.5 | — | — | — | — | — | 10 900 | 4.4 | — | 0.79 | 0 | 10.05 million | — | — | Kosovo |
| 99.9 | 99.9 | 16 | 3.19 | 99.3 | 5.1 | 48 | 27 700 | 7.7 | 25.5 | 2 | 1.3 | 8.632 million | 18 | 2050 | Latvia |
| 100 | 100 | 15 | — | — | 4.2 | — | 139 100 | 0.8 | — | — | 0 | — | 2 | — | Liechtenstein |
| 99.8 | 99.8 | 16 | 4.34 | 96.6 | 3.8 | 46.6 | 32 400 | 9.1 | 22.2 | 2 | 0.9 | 13.49 million | 17 | 2515 | Lithuania |
| 100 | 100 | 14 | 3.03 | 100 | 3.4 | — | 105 100 | 1.1 | — | 0.55 | 0 | 10.72 million | 5 | — | Luxembourg |
| 93.1 | 95.8 | 16 | 3.83 | 100 | 4.7 | — | 41 900 | 1.6 | 16.3 | 0.53 | 0.6 | 8.141 million | 25 | 2349 | Malta |
| 99.7 | 99.1 | 12 | 3.2 | 88.4 | 11.7 | 59.5 | 6700 | 32.3 | 9.6 | 0.37 | 0 | 7.653 million | — | 845 | Moldova |
| 99 | 99 | — | 6.56 | 100 | 1.8 | — | 115 700 | 0 | — | — | 0 | — | 11 | — | Monaco |
| 99.5 | 98 | 15 | 2.33 | 99.7 | — | 23.3 | 17 800 | 7.9 | 8.6 | 1.67 | 0 | 2.287 million | 55 | — | Montenegro |
| 99 | 99 | 18 | 3.51 | 100 | 3.5 | 73 | 53 900 | 1.2 | 8.8 | 1.35 | 0 | 250.2 million | 23 | 5048.8 | Netherlands |
| 98.8 | 96.8 | 13 | 2.87 | 99.4 | 7.8 | 40.2 | 14 900 | 16.2 | 21.5 | 1.19 | 0 | 7.459 million | 37 | 1346 | North Macedonia |
| 100 | 100 | 18 | 4.63 | 100 | 2.5 | 73.8 | 72 100 | 2.1 | — | 1.61 | 0 | 39.8 million | 37 | 7153.2 | Norway |
| 99.9 | 99.7 | 16 | 2.4 | 98.3 | 4.4 | 62.3 | 29 600 | 11.5 | 17.6 | 2 | 0.9 | 359 million | 37 | 2429 | Poland |
| 97.1 | 94.4 | 16 | 3.34 | 100 | 2.6 | 23.9 | 30 500 | 8.6 | 19 | 1.36 | 0 | 54.97 million | 165 | 2574.1 | Portugal |
| 99.1 | 98.5 | 14 | 2.26 | 100 | 9.2 | 70 | 24 600 | 28.3 | 22.4 | 1.91 | 1.2 | 72.07 million | 64 | 1772 | Romania |
| 99.7 | 99.6 | 16 | 4.01 | 96.9 | 6.7 | 68 | 27 900 | 9.4 | 13.3 | 4.24 | 0.6 | 1.847 billion | 116 | 4519 | Russia |
| 97 | 95 | 15 | 6.15 | — | 4.3 | — | 59 000 | 0.2 | — | — | 0 | — | 1 | — | San Marino |
| 99.5 | 98.2 | 15 | 3.13 | 99.2 | 5.7 | 58.4 | 15 100 | 19.4 | 8.9 | 1.39 | 0 | 50.21 million | 46 | 2066 | Serbia |
| 99.7 | 99.6 | 15 | 2.46 | 100 | 5 | 74 | 33 100 | 3.9 | 12.3 | 1.73 | 0.6 | 34.86 million | 34 | 3502.8 | Slovakia |
| 99.7 | 99.7 | 17 | 2.81 | 99.5 | 1.6 | 73.8 | 34 500 | 5.5 | 13.9 | 0.98 | 0.3 | 14.37 million | 77 | 3655 | Slovenia |
| 98.8 | 97.7 | 18 | 4.07 | 100 | 3.3 | 70.9 | 38 400 | 4.2 | 21.1 | 0.93 | 0 | 286.7 million | 232 | 3339.6 | Spain |
| 99 | 99 | 19 | 5.4 | 100 | 2.6 | 75.2 | 51 200 | 2 | 15 | 1 | 0 | 52.31 million | 30 | 5780.3 | Sweden |
| 99 | 99 | 16 | 4.24 | 100 | 3.6 | 72.9 | 62 100 | 3.3 | 6.6 | 0.71 | 0 | 38.95 million | 45 | 3599.3 | Switzerland |
| 99.8 | 99.7 | 15 | 3.01 | 96.2 | 7.7 | 65.4 | 8800 | 5.8 | 3.8 | 3.5 | 1.7 | 238.9 million | 61 | 3043 | Ukraine |
| 99 | 99 | 19 | 2.81 | 100 | 4.2 | 82 | 44 300 | 1.3 | 15 | 2.2 | 0 | 424 million | 73 | 3894.6 | United Kingdom |
| 87.2 | 73.1 | 14 | 1.83 | 83.6 | 18.9 | 57.1 | 15 200 | 10.8 | 23 | 5.81 | 0.3 | 135.9 million | 83 | 1058 | Algeria |
| 82 | 60.7 | 13 | 0.21 | 49 | 3.6 | 13.7 | 6800 | 85 | 36.6 | 2.95 | 3.5 | 20.95 million | 98 | 621 | Angola |
| 64.9 | 27.3 | 13 | 0.16 | 77.9 | 51.5 | 15.5 | 2300 | — | 36.2 | 1.14 | 11 | 5.664 million | 56 | 306 | Benin |
| 88 | 88.9 | 13 | 0.37 | 96.2 | 28.6 | 44.4 | 17 000 | — | 19.3 | 3.37 | 0.6 | 6.235 million | 17 | 1073 | Botswana |
| 43 | 29.3 | 9 | 0.06 | 82.3 | 54.7 | 31.7 | 1900 | 90 | 40.1 | 1.23 | 15.3 | 3.421 million | 18 | — | Burkina Faso |
| 88.2 | 83.1 | 11 | 0.05 | 75.9 | 57.4 | 28.5 | 700 | 93.6 | 64.6 | 2.21 | 13.5 | 217 000 | 50 | — | Burundi |
| 81.2 | 68.9 | 13 | 0.09 | 75.6 | 49.8 | 34.4 | 3700 | 70 | 30 | 1.6 | 4.3 | 7. 672 million | 536 | 428 | Cameroon |
| 91.7 | 82 | 12 | 0.77 | 91.7 | 21.1 | 52.9 | 7000 | — | 30 | 0.63 | 16.9 | 867 800 | 30 | — | Cape Verde |
| 50.7 | 24.4 | 7 | 0.06 | 68.5 | 84.3 | 15.2 | 700 | — | 62 | — | 7.9 | 413 800 | 29 | — | Central African Republic |
| 31.3 | 14 | 8 | 0.05 | 50.8 | 71.7 | 5.7 | 2300 | 80 | 47.6 | 2.79 | 9.3 | 342 200 | 27 | — | Chad |

# World statistics

| Country | Capital city | Population | Area (sq km) | Male life expectancy (years) | Female life expectancy (years) | Birth rate (per 1000 people) | Death rate (per 1000 people) | Fertility rate (births per woman) | Population under 15 (%) | Population over 65 (%) | Population growth rate (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | POPULATION | | | | | | | | | |
| Comoros | Moroni | 821 164 | 2235 | 62.6 | 67.4 | 25.3 | 7.1 | 3.21 | 38.54 | 3.98 | 1.57 |
| Congo | Brazzaville | 5 062 021 | 342 000 | 59 | 61.6 | 33.7 | 9.2 | 4.26 | 41.75 | 3.98 | 2.17 |
| Congo, Democratic Republic of | Kinshasa | 85 281 024 | 2 344 858 | 56.5 | 59.7 | 32.8 | 9.4 | 4.54 | 41.25 | 2.69 | 2.33 |
| Djibouti | Djibouti | 884 017 | 23 200 | 61.4 | 66.6 | 23.3 | 7.5 | 2.27 | 30.71 | 3.83 | 2.13 |
| Egypt | Cairo | 99 413 317 | 1 001 450 | 71.8 | 74.7 | 28.8 | 4.5 | 3.41 | 33.38 | 4.28 | 2.38 |
| Equatorial Guinea | Malabo | 797 457 | 28 051 | 63.8 | 66.2 | 31.7 | 7.6 | 4.29 | 39.46 | 3.49 | 2.41 |
| Eritrea | Asmara | 5 970 646 | 117600 | 63 | 68.2 | 29.1 | 7.1 | 3.9 | 39.53 | 3.95 | 0.89 |
| Eswatini | Mbabane | 1 087 200 | 17 364 | 55.1 | 59.3 | 25.8 | 10.7 | 2.63 | 34.41 | 3.77 | 0.82 |
| Ethiopia | Addis Ababa | 108 386 391 | 1 104 300 | 60.5 | 65.5 | 36 | 7.5 | 4.91 | 43.21 | 2.97 | 2.83 |
| Gabon | Libreville | 2 119 036 | 267 667 | 66.3 | 69.6 | 26.5 | 6.2 | 3.52 | 37.45 | 3.91 | 2.73 |
| Gambia | Banjul | 2 092 731 | 11 300 | 63 | 67.8 | 28.6 | 6.9 | 3.42 | 36.97 | 3.55 | 1.99 |
| Ghana | Accra | 28 102 471 | 238 533 | 64.9 | 70 | 30.2 | 6.8 | 3.96 | 37.83 | 4.3 | 2.16 |
| Guinea | Conakry | 11 855 411 | 245 857 | 60.4 | 64 | 36.4 | 8.9 | 4.98 | 41.4 | 3.85 | 2.75 |
| Guinea Bissau | Bissau | 1 833 247 | 36 125 | 59.2 | 63.6 | 37.3 | 8.5 | 4.81 | 43.55 | 3.04 | 2.48 |
| Ivory Coast | Yamoussoukro | 26 260 582 | 322 463 | 58 | 62.4 | 30.1 | 8.4 | 3.83 | 39.59 | 2.78 | 2.3 |
| Kenya | Nairobi | 48 397 527 | 580 367 | 63.1 | 66.1 | 22.6 | 6.7 | 2.81 | 39.03 | 3.08 | 1.57 |
| Lesotho | Maseru | 1 962 461 | 30 355 | 53 | 53.1 | 24.2 | 15.1 | 2.59 | 31.84 | 5.53 | 0.24 |
| Liberia | Monrovia | 4 809 768 | 111 369 | 61.6 | 66 | 37.9 | 7.4 | 5 | 43.72 | 2.85 | 2.59 |
| Libya | Tripoli | 6 754 507 | 1 759 540 | 75.1 | 78.7 | 17.2 | 3.7 | 2.03 | 25.53 | 4.43 | 1.45 |
| Madagascar | Antananarivo | 25 683 610 | 587 041 | 65.1 | 68.2 | 31 | 6.4 | 3.95 | 39.55 | 3.35 | 2.46 |
| Malawi | Lilongwe | 19 842 560 | 118 484 | 60.2 | 64.3 | 40.7 | 7.7 | 5.43 | 46.17 | 2.69 | 3.31 |
| Mali | Bamako | 18 429 893 | 1 240 192 | 58.6 | 63 | 43.2 | 9.6 | 5.9 | 48.03 | 3.02 | 2.98 |
| Mauritania | Nouakchott | 3 840 429 | 1 030 700 | 61.4 | 66.2 | 29.9 | 7.8 | 3.79 | 38.24 | 3.81 | 2.14 |
| Mauritius | Port Louis | 1 364 283 | 2040 | 72.6 | 79.7 | 12.8 | 7.1 | 1.74 | 19.9 | 10.17 | 0.57 |
| Morocco | Rabat | 34 314 130 | 446 550 | 74.2 | 80.5 | 17.5 | 4.9 | 2.09 | 25.47 | 6.95 | 0.95 |
| Mozambique | Maputo | 27 233 789 | 799 380 | 53.3 | 54.9 | 37.8 | 11.4 | 5.02 | 44.52 | 2.88 | 2.46 |
| Namibia | Windhoek | 2 533 224 | 824 292 | 62.7 | 66.2 | 26.8 | 7.7 | 3.21 | 36.54 | 3.93 | 1.91 |
| Niger | Niamey | 19 866 231 | 1 267 000 | 55 | 57.7 | 43.6 | 11.5 | 6.35 | 48.68 | 2.64 | 3.16 |
| Nigeria | Abuja | 203 452 505 | 923 768 | 57.5 | 61.1 | 35.2 | 9.6 | 4.85 | 42.45 | 3.26 | 2.54 |
| Rwanda | Kigali | 12 187 400 | 26 338 | 62.6 | 66.5 | 29.8 | 6.3 | 3.75 | 40.98 | 2.49 | 2.3 |
| Sao Tome and Principe | Sao Tome | 204 454 | 964 | 64.3 | 67.1 | 31.5 | 6.7 | 4.11 | 41.2 | 2.83 | 1.66 |
| Senegal | Dakar | 15 020 945 | 196 722 | 60.4 | 64.7 | 32.9 | 7.9 | 4.2 | 41.15 | 3.02 | 2.36 |
| Seychelles | Victoria | 94 633 | 455 | 70.7 | 79.8 | 13.4 | 7 | 1.85 | 19.51 | 7.79 | 0.74 |
| Sierra Leone | Freetown | 6 312 212 | 71 740 | 56.4 | 61.7 | 36 | 10.2 | 4.69 | 41.71 | 3.76 | 2.4 |
| Somalia | Mogadishu | 11 259 029 | 637 657 | 51 | 55.4 | 39.3 | 12.8 | 5.7 | 42.87 | 2.19 | 2.08 |
| South Africa | Pretoria, Cape Town and Bloemfontein | 55 380 210 | 1 219 090 | 62.7 | 65.6 | 19.9 | 9.3 | 2.26 | 28.18 | 5.81 | 0.97 |
| Sudan | Khartoum | 43 120 843 | 2 505 810 | 50.49 | 52.4 | 33.74 | 12.94 | 4.48 | 40.7 | 2.5 | 2.14 |
| South Sudan | Juba | 10 204 581 | 644 329 | 60 | 64 | 36.9 | 19.3 | 5.34 | 42.3 | 2.49 | -1.16 |
| Tanzania | Dodoma | 55 451 343 | 947 300 | 61.6 | 64.6 | 35.3 | 7.5 | 4.71 | 43.4 | 3.04 | 2.74 |
| Togo | Lome | 8 176 449 | 56 785 | 63.1 | 68.6 | 32.8 | 6.8 | 4.32 | 40.13 | 3.46 | 2.61 |
| Tunisia | Tunis | 11 516 189 | 163 610 | 74.3 | 77.6 | 17.4 | 6.4 | 2.17 | 25.25 | 8.22 | 0.95 |

| Male literacy rate (% of people who can read and write) | Female literacy rate (% of people who can read and write) | Average years of schooling | Doctors per 1000 people | Access to clean water (% of population) | Infant mortality (deaths per 1000 live births) | Contraception rate (% of population) | GDP per capita (US$) | Labour force in agriculture (% of labour force) | Poverty (% of population below the poverty line) | Military expenditure (% of GDP) | Aid received (% of GDP) | $CO_2$ emissions (metric tonnes) | Threatened species | Total energy consumption per capita (kg of oil equivalent) | Country |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATION | | | HEALTH | | | | ECONOMY | | | | | ENVIRONMENT | | | |
| 81.8 | 73.7 | 11 | 0.17 | 90.1 | 58.3 | 19.4 | 1600 | 80 | 44.8 | — | 9.2 | 193 600 | 89 | — | Comoros |
| 86.4 | 72.9 | 11 | 0.12 | 76.5 | 53.5 | 30.1 | 6800 | 35.4 | 46.5 | 2.55 | 0 | 5.239 million | 77 | 300 | Congo |
| 88.5 | 66.5 | 10 | 0.09 | 52.4 | 66.7 | 20.4 | 800 | — | 63 | 1.34 | 1 | 3.146 million | 195 | 295 | Congo, Democratic Republic of |
| 78 | 58.4 | 6 | 0.22 | 90 | 44.3 | 19 | 3600 | — | 23 | — | 12.9 | 950 200 | 81 | — | Djibouti |
| 86.5 | 75 | 13 | 0.79 | 99.4 | 18.3 | 58.5 | 12 700 | 25.8 | 27.8 | 2.5 | 1.3 | 232.7 million | 120 | 828 | Egypt |
| 97.4 | 93 | 10 | 0.4 | 47.9 | 63.3 | 12.6 | 37 400 | — | 44 | 0.18 | 1.6 | 3.062 million | 117 | — | Equatorial Guinea |
| 82.4 | 65.5 | 5 | 0.05 | 57.8 | 44.4 | 8.4 | 1600 | 80 | 50 | — | 29 | 597 100 | 96 | 175 | Eritrea |
| 87.4 | 87.5 | 11 | 0.08 | 74.1 | 46.6 | 66.1 | 10 100 | 10.7 | 63 | 1.81 | 0.9 | 1.14 million | 28 | — | Eswatini |
| 57.2 | 41.1 | 8 | 0.1 | 57.3 | 48.3 | 40.1 | 2200 | 72.7 | 29.6 | 0.67 | 10.8 | 12.18 million | 103 | 304 | Ethiopia |
| 85.3 | 81 | — | 0.36 | 93.2 | 32.9 | 31.1 | 18 100 | 64 | 34.3 | 1.43 | 0.2 | 4.293 million | 161 | 1234 | Gabon |
| 63.9 | 47.6 | 9 | 0.11 | 90.2 | 58.4 | 9 | 2600 | 75 | 48.4 | 3 | 11.6 | 607 300 | 42 | — | Gambia |
| 82 | 71.4 | 12 | 0.18 | 88.7 | 34.1 | 30.8 | 4700 | 44.7 | 24.2 | 0.4 | 11.7 | 13.67 million | 184 | 404 | Ghana |
| 38.1 | 22.8 | 9 | 0.08 | 76.8 | 55.3 | 8.7 | 2200 | 76 | 47 | 2.49 | 5.1 | 2.794 million | 101 | — | Guinea |
| 71.8 | 48.3 | 5 | 0.2 | 79.3 | 54.8 | 16 | 1900 | 82 | 67 | 1.76 | 37.3 | 397 900 | 49 | — | Guinea Bissau |
| 53.1 | 32.5 | 10 | 0.23 | 81.9 | 62.6 | 23.3 | 3900 | 68 | 46.3 | 1.39 | 3.8 | 11.54 | 191 | 432 | Ivory Coast |
| 81.1 | 74.9 | 11 | 0.2 | 63.2 | 36.1 | 60.5 | 3500 | 61.1 | 36.1 | 1.3 | 4.9 | 17.98 million | 334 | 503 | Kenya |
| 70.1 | 88.3 | 11 | 0.07 | 81.8 | 44.6 | 60.2 | 3300 | 86 | 57 | 1.85 | 4.6 | 711 100 | 11 | — | Lesotho |
| 62.4 | 32.8 | 10 | 0.04 | 75.6 | 50.6 | 31.2 | 1300 | 70 | 54.1 | 0.62 | 0 | 1.163 million | 122 | — | Liberia |
| 96.7 | 85.6 | 17 | 2.16 | 54.4 | 10.5 | 27.7 | 9600 | 17 | — | — | 0 | 46.48 million | 42 | 3254 | Libya |
| 66.7 | 62.6 | 10 | 0.18 | 51.5 | 40.1 | 47.9 | 1600 | — | 70.7 | 0.53 | 8.3 | 4.021 million | 647 | — | Madagascar |
| 69.8 | 55.2 | 11 | 0.02 | 90.2 | 42.1 | 59.2 | 1200 | 76.9 | 50.7 | 0.61 | 26.2 | 1.082 million | 156 | — | Malawi |
| 45.1 | 22.2 | 7 | 0.14 | 77 | 67.6 | 15.6 | 2200 | 80 | 36.1 | 2.63 | 15.7 | 3.388 million | 27 | — | Mali |
| 62.6 | 41.6 | 8 | 0.18 | 57.9 | 50.5 | 17.8 | 4500 | 50 | 31 | 2.97 | 22.7 | 2.615 million | 57 | — | Mauritania |
| 95.4 | 91 | 15 | 2.31 | 99.9 | 9.5 | 63.8 | 22 300 | 8 | 8 | 0.18 | 0.5 | 6.429 million | 222 | — | Mauritius |
| 78.6 | 58.8 | 13 | 0.73 | 85.4 | 21.1 | 70.8 | 8600 | 39.1 | 15 | 3.2 | 1.3 | 55.4 million | 95 | 458 | Morocco |
| 70.8 | 43.1 | 10 | 0.07 | 51.1 | 64 | 27.1 | 1300 | 74.4 | 46.1 | 0.81 | 23.3 | 11.12 million | 203 | 516 | Mozambique |
| 79.2 | 84.5 | 8 | — | 91 | 33.8 | 56.1 | 11 200 | 31 | 28.7 | 3.5 | 4.4 | 3.958 million | 88 | 679 | Namibia |
| 27.3 | 11 | 6 | 0.05 | 58.2 | 79.4 | 11 | 1200 | 79.2 | 45.4 | 4 | 11.6 | 2.534 million | 24 | — | Niger |
| 69.2 | 49.7 | 9 | 0.38 | 65.8 | 63.3 | 27.6 | 5900 | 70 | 70 | 0.5 | 0.4 | 104 million | 270 | 789 | Nigeria |
| 73.2 | 68 | 11 | 0.13 | 76.1 | 29.1 | 53.2 | 2100 | 75.3 | 39.1 | 1.21 | 17.9 | 985 600 | 54 | — | Rwanda |
| 81.8 | 68.4 | 12 | — | 97.1 | 44.1 | 40.6 | 3200 | 26.1 | 66.2 | — | 75.2 | 148 100 | 68 | — | Sao Tome and Principe |
| 64.8 | 39.8 | 9 | 0.07 | 78.5 | 48 | 27.8 | 3500 | 77.5 | 46.7 | 1.38 | 9.7 | 8.644 million | 77 | 261 | Senegal |
| 91.4 | 92.3 | 16 | 0.95 | 95.7 | 9.7 | — | 29 300 | 3 | 39.3 | 1.57 | 3 | 1.15 million | 190 | — | Seychelles |
| 58.7 | 37.7 | 7 | 0.03 | 62.6 | 66.7 | 22.5 | 1600 | 61.1 | 70.2 | 0.81 | 28.7 | 984 800 | 111 | — | Sierra Leone |
| 49.7 | 25.8 | — | 0.02 | 31.7 | 93 | 7.9 | — | 71 | — | 0 | 0 | 852 500 | 125 | — | Somalia |
| 95.4 | 93.4 | 14 | 0.91 | 93.2 | 29.9 | 54.6 | 13 600 | 4.6 | 16.6 | 1.07 | 0.4 | 572.3 million | 417 | 2722 | South Africa |
| 71.8 | 50.5 | — | 30 | 70 | 82.43 | 7.6 | 2300 | 80 | 40 | 3 | 2 | 16.03 million | 110 | 508 | Sudan |
| 40 | 16 | — | — | 58.7 | 90.4 | 4 | 1600 | — | 66 | 1.33 | — | — | — | — | South Sudan |
| 93.2 | 73.1 | 8 | 0.04 | 55.6 | 38.7 | 38.4 | 3200 | 66.9 | 22.8 | 1.14 | 0 | 14.57 million | 652 | 532 | Tanzania |
| 77.3 | 51.2 | 13 | 0.05 | 63.1 | 40.8 | 19.9 | 1700 | 65 | 55.1 | 1.86 | 5.7 | 2.651 million | 50 | 325 | Togo |
| 89.6 | 74.2 | 15 | 1.27 | 97.7 | 11.7 | 62.5 | 11 900 | 14.8 | 15.5 | 2.03 | 1.1 | 23.42 million | 63 | 843 | Tunisia |

# World statistics

| Country | Capital city | Population | Area (sq km) | Male life expectancy (years) | Female life expectancy (years) | Birth rate (per 1000 people) | Death rate (per 1000 people) | Fertility rate (births per woman) | Population under 15 (%) | Population over 65 (%) | Population growth rate (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | POPULATION | | | | | | | | | |
| Uganda | Kampala | 40 853 749 | 241 038 | 54.8 | 57.8 | 42.4 | 9.9 | 5.62 | 47.84 | 1.96 | 3.18 |
| Zambia | Lusaka | 16 445 079 | 752 618 | 51.4 | 54.7 | 41.1 | 12 | 5.58 | 45.95 | 2.31 | 2.91 |
| Zimbabwe | Harare | 14 030 368 | 390 757 | 59 | 63.2 | 34 | 9.9 | 3.97 | 38.62 | 4.5 | 1.68 |
| **NORTH AMERICA** | | | | | | | | | | | |
| Antigua and Barbuda | St John's | 95 882 | 442 | 74.8 | 80.8 | 15.6 | 5.8 | 1.99 | 22.91 | 8.32 | 1.2 |
| Bahamas | Nassau | 332 634 | 13 880 | 70.4 | 75.4 | 15.1 | 7.3 | 1.94 | 22.39 | 8.05 | 0.79 |
| Barbados | Bridgetown | 293 131 | 430 | 73.3 | 78.1 | 11.6 | 8.6 | 1.68 | 17.8 | 12.36 | 0.26 |
| Belize | Belmopan | 385 854 | 22 966 | 73.1 | 76.3 | 22.9 | 4.2 | 2.8 | 33.61 | 4.35 | 1.8 |
| Canada | Ottawa | 35 881 659 | 9 984 670 | 79.4 | 84.8 | 10.2 | 8.8 | 1.6 | 15.43 | 19.08 | 0.72 |
| Costa Rica | San Jose | 4 987 142 | 51 100 | 76.2 | 81.7 | 15.3 | 4.8 | 1.89 | 22.43 | 8.11 | 1.13 |
| Cuba | Havana | 11 116 396 | 110 860 | 76.6 | 81.4 | 10.6 | 8.9 | 1.71 | 16.44 | 15.22 | -0.27 |
| Dominica | Roseau | 73 286 | 754 | 72.61 | 78.64 | 15.73 | 8.2 | 2.09 | 24 | 10.2 | 0.21 |
| Dominican Republic | Santo Domingo | 10 298 756 | 48 670 | 69.7 | 73.1 | 18.9 | 6.4 | 2.28 | 27.56 | 5.92 | 0.17 |
| El Salvador | San Salvador | 6 187 271 | 21 041 | 71.8 | 78.6 | 16.1 | 5.8 | 1.84 | 25.3 | 7.69 | 0.25 |
| Grenada | St George's | 112 207 | 344 | 72.1 | 77.6 | 15.2 | 8.2 | 2 | 23.84 | 10.31 | 0.42 |
| Guatemala | Guatemala City | 16 581 273 | 108 889 | 69.8 | 73.9 | 24.6 | 5 | 2.87 | 34.55 | 4.46 | 1.72 |
| Haiti | Port-au-Prince | 10 788 440 | 27 750 | 61.9 | 67.2 | 22.6 | 7.5 | 2.66 | 32.37 | 4.21 | 1.31 |
| Honduras | Tegucigalpa | 9 182 766 | 112 090 | 69.6 | 73 | 22 | 5.3 | 2.61 | 32.37 | 4.41 | 1.56 |
| Jamaica | Kingston | 2 812 090 | 10 991 | 72.7 | 76.5 | 16.5 | 7.6 | 2.09 | 26.01 | 8.71 | -0.05 |
| Mexico | Mexico City | 125 959 205 | 1 964 375 | 73.5 | 79.2 | 18.1 | 5.4 | 2.22 | 26.61 | 7.26 | 1.09 |
| Nicaragua | Managua | 6 085 213 | 130 370 | 71.5 | 76.1 | 17.5 | 5.2 | 1.87 | 26.65 | 5.46 | 0.97 |
| Panama | Panama City | 3 800 644 | 75 420 | 76.1 | 81.9 | 17.6 | 5 | 2.28 | 26.13 | 8.57 | 1.24 |
| St Kitts and Nevis | Basseterre | 53 094 | 261 | 73.7 | 78.7 | 13 | 7.2 | 1.77 | 20.09 | 9.03 | 0.7 |
| St Lucia | Castries | 165 510 | 616 | 75.4 | 81 | 13.1 | 7.8 | 1.74 | 19.77 | 12.11 | 0.31 |
| St Vincent and the Grenadines | Kingstown | 101 844 | 389 | 73.7 | 77.9 | 13 | 7.4 | 1.78 | 20.87 | 9.82 | -0.23 |
| United States of America | Washington DC | 329 256 456 | 9 833 517 | 77.8 | 82.3 | 12.4 | 8.2 | 1.87 | 18.62 | 16.03 | 0.8 |
| **SOUTH AMERICA** | | | | | | | | | | | |
| Argentina | Buenos Aires | 44 694 198 | 2 780 400 | 74.4 | 80.8 | 16.5 | 7.5 | 2.25 | 24.4 | 11.79 | 0.89 |
| Bolivia | La Paz and Sucre | 11 306 341 | 1 098 581 | 67 | 72.8 | 21.6 | 6.3 | 2.58 | 31.34 | 5.43 | 1.48 |
| Brazil | Brasilia | 208 846 892 | 8 515 770 | 70.7 | 78 | 13.9 | 6.7 | 1.75 | 21.89 | 8.61 | 0.71 |
| Chile | Santiago | 17 925 262 | 756 102 | 76 | 82.2 | 13.4 | 6.3 | 1.79 | 19.98 | 11.13 | 0.75 |
| Colombia | Bogota | 48 168 996 | 1 138 910 | 73 | 79.5 | 15.8 | 5.5 | 1.98 | 23.89 | 7.73 | 0.97 |
| Ecuador | Quito | 16 498 502 | 283 561 | 74.2 | 80.3 | 17.6 | 5.1 | 2.15 | 26.64 | 7.67 | 1.25 |
| Guyana | Georgetown | 740 685 | 214 969 | 65.9 | 72.1 | 15.4 | 7.4 | 1.97 | 25.38 | 6.39 | 0.48 |
| Paraguay | Asuncion | 7 025 763 | 406 752 | 74.9 | 80.4 | 16.6 | 4.8 | 1.9 | 24.13 | 7.35 | 1.17 |
| Peru | Lima | 31 331 228 | 1 285 216 | 72.1 | 76.4 | 17.6 | 6.1 | 2.1 | 26.01 | 7.61 | 0.94 |
| Suriname | Paramaribo | 597 927 | 163 820 | 70.3 | 75.3 | 15.6 | 6.1 | 1.9 | 24.11 | 6.17 | 1 |
| Trinidad and Tobago | Port of Spain | 1 215 527 | 5128 | 70.5 | 76.4 | 12.3 | 8.9 | 1.7 | 19.24 | 11.1 | -0.23 |
| Uruguay | Montevideo | 3 369 299 | 176 215 | 74.4 | 82.3 | 13 | 9.4 | 1.79 | 19.91 | 14.38 | 0.27 |
| Venezuela | Caracas | 31 689 176 | 912 050 | 73.2 | 79.3 | 18.5 | 5.3 | 2.3 | 27.04 | 7.38 | 1.21 |

| Male literacy rate (% of people who can read and write) | Female literacy rate (% of people who can read and write) | Average years of schooling | Doctors per 1000 people | Access to clean water (% of population) | Infant mortality (deaths per 1000 live births) | Contraception rate (% of population) | GDP per capita (US$) | Labour force in agriculture (% of labour force) | Poverty (% of population below the poverty line) | Military expenditure (% of GDP) | Aid received (% of GDP) | $CO_2$ emissions (metric tonnes) | Threatened species | Total energy consumption per capita (kg of oil equivalent) | Country |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATION | | | HEALTH | | | | ECONOMY | | | | | ENVIRONMENT | | | |
| 85.3 | 71.5 | 10 | 0.09 | 79 | 54.6 | 41.8 | 2400 | 71 | 21.4 | 1.7 | 13.3 | 4.703 million | 163 | — | Uganda |
| 70.9 | 56 | 7 | 0.09 | 65.4 | 59.3 | 49 | 4000 | 54.8 | 54.4 | 1.25 | 27.3 | 3.777 million | 45 | 611 | Zambia |
| 88.5 | 84.6 | 10 | 0.08 | 76.9 | 31.9 | 66.8 | 2300 | 67.5 | 72.3 | 2.2 | 2.4 | 12.06 million | 51 | 747 | Zimbabwe |
| 98.4 | 99.4 | 13 | 2.76 | 97.9 | 11.7 | — | 26 400 | 7 | — | — | 1.4 | 740 300 | 39 | — | Antigua and Barbuda |
| 94.7 | 96.5 | — | 1.94 | 98.4 | 11.1 | 61.7 | 32 400 | 4 | 9.3 | — | 0.1 | 3.089 million | 60 | — | Bahamas |
| 99 | 99.6 | 15 | 2.49 | 99.7 | 10 | 59.2 | 18 600 | 10 | — | — | 0 | 1.76 million | 27 | — | Barbados |
| 76.7 | 77.1 | 13 | 1.13 | 99.5 | 12 | 51.4 | 8300 | 10.2 | 41 | 1.58 | 1.8 | 556 700 | 89 | — | Belize |
| 99 | 99 | 16 | 2.61 | 99.8 | 4.5 | 74.7 | 48 400 | 2 | 9.4 | 1.29 | 0 | 640.6 million | 77 | 8472.6 | Canada |
| 97.7 | 97.8 | 15 | 1.15 | 97.8 | 7.8 | 77.8 | 16 900 | 14 | 21.7 | — | 0.1 | 7.653 million | 256 | 883 | Costa Rica |
| 99.9 | 99.8 | 14 | 8.19 | 94.9 | 4.4 | 73.7 | 12 300 | 18 | — | 3.08 | 0 | 26.94 million | 297 | 905 | Cuba |
| 94 | 94 | 13 | 50 | 97 | 13.65 | 49.8 | 10 200 | 40 | 30 | — | 5.7 | 199 600 | 48 | — | Dominica |
| 93.8 | 93.8 | 14 | 1.56 | 84.7 | 22.7 | 69.5 | 17 000 | 14.4 | 30.5 | 0.66 | 0.3 | 23.79 million | 125 | 827 | Dominican Republic |
| 90.3 | 86.3 | 12 | 1.57 | 93.8 | 16.3 | 72 | 8000 | 21 | 32.7 | 0.9 | 1.4 | 7.331 million | 69 | 673 | El Salvador |
| 98.6 | 98.6 | 17 | 1.45 | 96.6 | 9.4 | 54.3 | 15 100 | 11 | 38 | — | 4 | 283 600 | 38 | — | Grenada |
| 87.4 | 76.3 | 11 | 0.36 | 92.8 | 23.3 | 60.6 | 8200 | 31.4 | 59.3 | 0.37 | 1.4 | 17.15 million | 233 | 634 | Guatemala |
| 64.3 | 57.3 | — | 0.23 | 57.7 | 45.4 | 34.3 | 1800 | 38.1 | 58.5 | — | 5.1 | 3.595 million | 133 | 293 | Haiti |
| 89 | 88.9 | 10 | 0.31 | 91.2 | 16.7 | 73.2 | 5600 | 39.2 | 29.6 | 1.59 | 7.6 | 9.436 million | 234 | 537 | Honduras |
| 84 | 93.1 | 12 | 1.32 | 93.8 | 12.4 | 72.5 | 9200 | 16.1 | 17.1 | 0.9 | 0.1 | 8.9 million | 283 | 1445 | Jamaica |
| 95.8 | 94 | 14 | 2.25 | 96.1 | 11.3 | 66.9 | 19 900 | 13.4 | 46.2* | 0.47 | 0 | 454.1 million | 898 | 1701 | Mexico |
| 82.4 | 83.2 | 11 | 1.01 | 87 | 17.7 | 80.4 | 5900 | 31 | 29.6 | 0.61 | 23.4 | 5.405 million | 115 | 648 | Nicaragua |
| 95.7 | 94.4 | 13 | 1.57 | 94.7 | 9.6 | 62.8 | 25 400 | 17 | 23 | — | 0.2 | 26.08 million | 329 | 804 | Panama |
| — | — | 14 | 2.52 | 98.3 | 8.2 | — | 28 200 | — | — | — | 1.2 | 248 100 | 37 | — | St Kitts and Nevis |
| 89.5 | 90.6 | 14 | 0.11 | 96.3 | 10.6 | 55.5 | 14 400 | 21.7 | — | — | 1.7 | 437 900 | 46 | — | St Lucia |
| 96 | 96 | 12 | 0.66 | 95.1 | 11.7 | 58.3 | 11 500 | 26 | — | — | 1.9 | 226 800 | 17 | — | St Vincent and the Grenadines |
| 99 | 99 | 16 | 2.59 | 99.2 | 5.7 | 75.9 | 59 800 | 0.7 | 15.1 | 3.29 | 0 | 5.242 billion | 1203 | 7885 | United States of America |
| 99.1 | 99.1 | 18 | 3.96 | 99.1 | 9.5 | 81.3 | 20 900 | 5.3 | 25.7** | 0.95 | 0 | 203.7 million | 212 | 1644 | Argentina |
| 96.5 | 88.6 | — | 1.61 | 90 | 34.2 | 66.5 | 7600 | 29.4 | 38.6 | 1.76 | 5.8 | 17.66 million | 159 | 578 | Bolivia |
| 91.7 | 92.3 | 15 | 2.15 | 98.1 | 16.9 | 80.2 | 15 600 | 9.4 | 4.2 | 1.41 | 0.1 | 513.8 million | 769 | 1124 | Brazil |
| 97 | 96.7 | 16 | 1.08 | 99 | 6.4 | 76.3 | 24 600 | 9.2 | 14.4 | 1.87 | 0.1 | 88.23 million | 145 | 1815 | Chile |
| 94.4 | 94.9 | 15 | 2.08 | 91.4 | 13.2 | 81 | 14 400 | 17 | 28 | 3.5 | 0.2 | 95.59 million | 658 | 627 | Colombia |
| 95.4 | 93.3 | 16 | 2.05 | 86.9 | 15.9 | 80.1 | 11 500 | 26.1 | 21.5 | 1.7 | 1.1 | 37.54 million | 2211 | 789 | Ecuador |
| 87.2 | 89.8 | 11 | 0.8 | 98.3 | 29.5 | 33.9 | 8100 | — | 35 | 1.42 | 15.2 | 2.131 million | 69 | — | Guyana |
| 95.5 | 93.8 | 12 | 1.37 | 98 | 18.1 | 68.4 | 12 800 | 26.5 | 22.2 | 1.25 | 1.1 | 7.74 million | 46 | 673 | Paraguay |
| 97.2 | 91.2 | 15 | 1.27 | 86.7 | 17.8 | 75.4 | 13 500 | 25.8 | 22.7 | 0.9 | 0.8 | 55.94 million | 544 | 494 | Peru |
| 96.1 | 95 | 12 | 1.13 | 94.8 | 23.7 | 47.6 | 14 900 | 11.2 | 70 | — | 4.1 | 2.075 million | 65 | — | Suriname |
| 99.2 | 98.7 | 11 | 2.67 | 95.1 | 21.6 | 40.3 | 31 300 | 3.1 | 20 | 1.12 | 0 | 48.92 million | 49 | 9736 | Trinidad and Tobago |
| 98.2 | 99 | 16 | 5.05 | 99.7 | 8.1 | 79.6 | 22 400 | 13 | 9.7 | 1.85 | 0.1 | 7.554 million | 79 | 836 | Uruguay |
| 97 | 97.2 | 14 | 1.94 | 93.1 | 11.9 | 75 | 12 500 | 7.3 | 19.7 | 1 | 0.1 | 129.9 million | 268 | 2293 | Venezuela |

* ( 47+ if asset based rather than food based)

** (data based on private estimates)

# Gazetteer index

# Gazetteer index



## B

# Gazetteer index

## C

# Gazetteer index

# Gazetteer index



## D

## E

# Gazetteer index



## F

# Gazetteer index

## H

# Gazetteer index



## I

## J



## K

# Gazetteer index

# Gazetteer index



## L

## M

# Gazetteer index

# Gazetteer index

## N

# Gazetteer index

# Gazetteer index



## P

# Gazetteer index



## Q



## R

# Gazetteer index

# Gazetteer index

## T

# Gazetteer index

# Gazetteer index



## U



## V

## W

# Gazetteer index

## Z

# Subject index

# Subject index

## T



## U



## V



## W

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